Fact Sheet for IPDES Permit No. ID0021296

10/21/2020

Idaho Department of Environmental Quality (DEQ) proposes to reissue an Idaho Pollutant Discharge Elimination System (IPDES) Permit to discharge pollutants pursuant to the provisions of IDAPA 58.01.25 to:

South Fork Coeur d'Alene River Sewer District (SFCDRSD)
Mullan Wastewater Treatment Plant
191 Mill Road
Mullan, ID 83846

Public Comment Start Date:	07/15/2020
Public Comment Expiration Date:	08/14/2020
Technical Contact:	Karen Jackson 208-373-0382 Karen.jackson@deq.idaho.gov

Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Idaho Department of Environmental Quality (DEQ) made in writing the Idaho Pollutant Discharge Elimination System (IPDES) permit for South Fork Coeur d'Alene River Sewer District (SFCDRSD) Mullan Wastewater Treatment Plant (Mullan WWTP).

This fact sheet complies with IDAPA 58.01.25.108.02 of the Idaho Administrative Code, which requires DEQ to prepare a permit and accompanying fact sheet for public evaluation before issuing an IPDES permit.

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Acronyms

1Q10	1-day, 10 year low flow
7Q10	7-day, 10 year low flow
30Q5	30-day, 5 year low flow
30Q10	30-day, 10 year low flow
AML	Average Monthly Limit
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
°C	Degrees Celsius
$CBOD_5$	Carbonaceous Biochemical Oxygen Demand, five-day
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CV	Coefficient of Variation
CWA	Clean Water Act
DEQ	Idaho Department of Environmental Quality
DMR	Discharge Monitoring Report
EPA	U.S. Environmental Protection Agency
IDAPA	Refers to citations of Idaho administrative rules
IDWR	Idaho Department of Water Resources
I/I	Inflow and Infiltration
IPDES	Idaho Pollutant Discharge Elimination System
lbs/day	Pounds per day
LTA	Long Term Average
MDL	Maximum Daily Limit or Method Detection Limit
mgd	Million gallons per day
mg/L	Milligrams per liter
mL	Milliliters
O&M	Operations and maintenance
POC	Pollutant(s) of Concern
POTW	Publicly Owned Treatment Works
QAPP	Quality Assurance Project Plan
RPA	Reasonable Potential Analysis

RPMF	Reasonable Potential Multiplication Factor
RPTE	Reasonable Potential To Exceed
SIU	Significant Industrial User
s.u.	Standard Units
TBEL	Technology Based Effluent Limits
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_c	Toxic Units, Chronic
WET	Whole Effluent Toxicity
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQC	Water Quality Criteria
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

1 Introduction

This fact sheet provides information on the permit for the Idaho Department of Environmental Quality (DEQ) Idaho Pollutant Discharge Elimination System (IPDES) permit for South Fork Coeur d'Alene River Sewer District (SFCDRSD) Mullan Wastewater Treatment Plant (Mullan WWTP). This fact sheet complies with the Rules Regulating the Idaho Pollutant Discharge Elimination System Program (IDAPA 58.01.25), which requires DEQ to prepare a permit and accompanying fact sheet for public evaluation before issuing an IPDES permit.

DEQ proposes to reissue the IPDES permit for SFCDRSD Mullan WWTP. To ensure protection of water quality and human health, the permit places conditions on the type, volume, and concentration of pollutants discharged from the facility to waters of the United States.

This fact sheet includes:

- a map and description of the discharge location;
- a listing of effluent limits and other conditions the facility must comply with;
- documentation supporting the effluent limits;
- technical material supporting the conditions in the permit; and
- information on public comment, public hearing, and appeal procedures.

Terms used in this fact sheet are defined in Section 5, Definitions, of the permit.

Public Comment

The permit application, permit, and fact sheet describing the terms and conditions applicable to the permit are available for public review and comment during a public comment period. The public is provided at least 30 days to provide comments to DEQ. Persons wishing to request a public meeting for this facility's permit must do so in writing within 14 calendar days of public notice being published that a permit has been prepared; requests for public meetings must be submitted to DEQ by 07/29/2020. Requests for extending a public comment period must be provided to DEQ in writing before the last day of the comment period. For more details on preparing and filing comments about these documents, please see the IPDES guidance *Public Participation in the Permitting Process* at "*http://www.deq.idaho.gov/media/60178029/ipdes-public-participation-permitting-process-0216.pdf"*. For more information, please contact the permit writer.

After the close of the public comment period, DEQ considers information provided by the public, prepares a document summarizing the public comments received, and may make changes to the permit in response to the public comments. DEQ will include the summary and responses to comments in Appendix D of the final fact sheet. DEQ may request more information from the applicant in order to respond to public comments (IDAPA 58.01.25.109.02.h.). After the public comment period and prior to issuing the final permit decision, DEQ will also provide the applicant an opportunity to submit additional information to address proposed changes and support the response to public comments. DEQ will assess the public comment in conjunction with any additional information received from the applicant and develop a proposed permit.

The Environmental Protection Agency (EPA) may take up to 90 days from the publication of public notice of the permit to develop and document specific grounds for objections to a

proposed permit. If EPA objects to a proposed permit DEQ must satisfactorily address the objections within the time period specified in the memorandum of agreement between EPA and DEQ (40 CFR 123.44). Otherwise, EPA may issue a permit in accordance with 40 CFR 121, 122, 124. If EPA issues the permit, any state, interstate agency, or interested person may request EPA hold a public hearing regarding the objection.

Permit Issuance

Following the public comment period(s) on a permit and after receipt of any comments on the proposed permit from EPA, DEQ will issue a final permit decision, the final permit, and the fact sheet. All comments received will be addressed in Appendix D of the final fact sheet and any resulting changes to the permit or fact sheet documented. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit (IDAPA 58.01.25.107.04.). The final permit and final fact sheet will be posted on the DEQ webpage. Response to comments will be located in the final fact sheet as an appendix.

The permit holder or applicant and any person or entity who filed comments or who participated in a public meeting on the permit may file a petition for review of a permit decision as outlined in Appendix C. The petition for review must be filed with DEQ's hearing coordinator within 28 days after DEQ serves notice of the final permit decision. Any party that participated in the petition for review that is still aggrieved by the final IPDES action or determination has a right to file a petition for judicial review (IDAPA 58.01.25.204.26).

Documents are Available for Review

The IPDES permit and fact sheet can be reviewed or obtained by visiting or contacting the DEQ State office between 8:00 a.m. and 5:00 p.m., Monday through Friday at the address below. The permit, and fact sheet can also be found by visiting the DEQ website at "*http://www.deq.idaho.gov/news-public-comments-events/*."

DEQ
1410 N. Hilton St.
Boise, ID 83706
Ph: 208-373-0502
Toll-free: 1-888-800-3480

The fact sheet and permits are also available at the DEQ Regional Office:

DEQ Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
Ph: 208-769-1422
Toll-free: 1-888-370-0017

Disability Reasonable Accommodation Notice

For technical questions regarding the permit or fact sheet, contact the permit writer at the phone number or e-mail address at the beginning of this fact sheet. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 (ask to be connected to the permit writer at the above phone number). Additional services can be made available to a person with disabilities by contacting the permit writer.

2 Background Information

2.1 Facility Description

This fact sheet provides information on the IPDES permit for the following entity:

Table 1. Facility information.

Permittee	SFCDRSD Mullan WWTP
Facility Physical Address	191 Mill Road Mullan, ID 83846
Facility Mailing Address	1020 Polaris Avenue Osburn, ID 83849
Facility Contact	Joe Close, District Manager Ph: (208) 753-8041 jclose@southforksd.com
Responsible Official	Joe Close
Facility Location	Latitude: 47.466022° Longitude: -115.811469°
Receiving Water Name	South Fork Coeur d'Alene River
Outfall Location	Latitude: 47.465647° Longitude: -115.811892°
Permit Status	
Application Submittal Date	March 26, 2018
Date Application Deemed Complete	March 29, 2018

The SFCDRSD owns and operates the Mullan WWTP located in Mullan, Idaho. The collection system has no combined sewers. The facility serves a resident population of 692 based on their permit application. There are no industries discharging process wastewater to the facility.

2.1.1 Facility Information

The design flow of the facility is 0.55 mgd. The treatment process consists of two aeration basins for biological treatment, secondary clarifiers, and chlorination to treat domestic wastewater. Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A. The design flow is less than 1 mgd, thus the facility is considered a minor facility.

2.1.2 Treatment Process

The Mullan WWTP treats domestic sewage from the City of Mullan. There are no industrial discharges to the system and septage is not accepted. Collected wastewater flows via gravity in underground sewers to the WWTP. Inflow and infiltration (I/I) of surface and groundwater with high metals concentrations has been a continuing problem for the WWTP. The Mullan WWTP has obtained funding for sewer main upgrades.

The influent to the WWTP sewage is pumped from a wet well and through a bar screen. The wastewater flows into one of two aeration basins for biological treatment before flowing to the secondary clarifiers. The clarifier settles out the sludge before the effluent is disinfected with chlorine and then dechlorinated with sodium bisulfate before discharge to the South Fork Coeur d'Alene River. A map showing the location of the Mullan WWTP and details about the wastewater treatment processes (including a process diagram) are provided in Appendix A.

Upgrades and improvements that were made to the Mullan WWTP during 2008 include: a lift station retrofit, manually cleaned bar racks, a new secondary clarifier rake mechanism, fine bubble diffusers, rotary lobe blowers, new motor control center, new chemical feed equipment, and a sodium bisulfite dechlorination system.

The Mullan WWTP is currently undergoing phased upgrades and improvements. The first phase of improvements includes replacing influent pumps, upgrading the alkalinity addition system, replacing coating in the basin, adding a solids return to the aeration basin, replacing effluent flow meter, upgrading the chlorine contact chamber, upgrading the dechlorination system, and upgrading the supervisory control and data acquisition (SCADA) system (JUB 2016).

2.1.3 Permit History

The SFCDRSD owns, operates, and maintains the Mullan WWTP located in Mullan, Idaho, Shoshone County. The secondary treatment facility has been active since 1975. The facility's previous permit became effective on October 1, 2013 and expired on September 30, 2018. A complete application for permit reissuance was submitted to the EPA on March 26, 2018. Since the permit was not reissued before the expiration date and the facility submitted a timely application, the permit was administratively extended.

The previous permit included a variance from the water quality standards for cadmium, lead and zinc. The variance was originally issued in 2004, for a 5 year period based on socioeconomic hardship and metals impacted surface and groundwater. When the 2004 permit was administratively continued by the EPA in 2009, the IDEQ re-issued the variance which became effective on July 31, 2009, thus the final permit limits were not put into effect. The variance expired on July 20, 2014. The variance was not re-issued by DEQ in the 2013 permit, with the understanding that the SFCDRSD would work to reduce I/I during a 20 year compliance schedule. Final limits included in the previous permit using site-specific criteria (SSC). SSC for cadmium, lead and zinc apply to this segment. Because SSC limits were not immediately achievable, interim limits and a compliance schedule were included in the previous permit effective through December 31, 2034.

Inflow and infiltration (I/I) has historically been an issue for the Mullan WWTP. In addition to adding to influent volume, metals in groundwater and storm water runoff enter the system. Metals concentrations are high in domestic water sources, groundwater, and storm water due to

regional legacy mining impacts. The City of Mullan started construction on collection system improvements to reduce I/I in the summer of 2020.

2.1.4 Compliance History

DEQ reviewed the last five years and nine months of effluent monitoring data (October 2013 – July 2019) to determine compliance. The data are summarized in Table 2. Overall, the facility had a good compliance record.

Table 2. Effluent limit violations, October 2013 – July 2019.

Parameter Exceeding Permit Limits	Limit	Units	Number of Instances (10/2013-7/2019)
BOD_5	Percent Removal	%	1
TSS	Weekly Average	mg/L	2
TSS	Percent Removal	%	1
E. coli	Daily Maximum	cfu/100/mL	4
Cadmium, total recoverable	Monthly Average	µg/L	5
Cadmium, total recoverable	Daily Maximum	µg/L	3
Lead, total recoverable	Monthly Average	µg/L	2
Lead, total recoverable	Daily Maximum	µg/L	1
Ammonia	Monthly Average	mg/L	1
Zinc, total recoverable	Monthly Average	µg/L	4
Total residual chlorine (TRC)	Daily maximum	µg/L	3

DEQ conducted an inspection of the facility in July 2019. The inspection encompassed the wastewater treatment process, records review, operation and maintenance, and the collection system. Areas of concern noted during the inspection included effluent grab sample location, secondary containment of chemical, and flow meter calibration.

To date, the Mullan WWTF is up-to-date with their compliance schedule. An I/I study was submitted on December 28, 2015. The Facility Plan was submitted on December 11, 2015. Progress reports are submitted annually.

2.1.5 Sludge/Biosolids

The EPA Region 10, under the authority of the CWA, issues separate sludge-only permits for the purpose of regulating biosolids. Permits for sludge management are independent of IPDES discharge permits and must be obtained from EPA. The IPDES program will take over permitting of sludge/biosolids in July 2021. In addition, sludge management plans must be submitted to DEQ and must follow the procedures in IDAPA 58.01.16. At the time of permit issuance, the WWTP did not require a sludge management plan.

The Mullan WWTP includes an aerated holding basin for biosolids storage until disposed of at the Page WWTP. The 38,000 gallon aerobic holding basin was retrofitted with new fine bubble diffuser aerators during the 2006 upgrades. Piping, valves, and the basin's interior coating were also repaired and/or replaced as part of the upgrades.

2.1.6 Outfall Description

The outfall is located south of the WWTP, on the north bank of the South Fork Coeur d'Alene River. The outfall is a corrugated metal pipe (>18 inches), located roughly 10 feet above the river bed. The outfall is only likely submerged during extreme peak flow events.

2.1.7 Wastewater Influent Characterization

The Mullan WWTP reported the concentration of influent pollutants in Discharge Monitoring Reports (DMRs) and results are characterized in Table 3. The tabulated data represents the quality of the influent wastewater received from October 2013 to July 2019.

Table 3. Wastewater influent characterization, October 2013 to July 2019.

Parameter	Units	# of Samples	Average Value	Maximum Value	Data Source
BOD_5	mg/L	70	158	282	DMR
TSS	mg/L	70	241	592	DMR

2.1.8 Wastewater Effluent Characterization

The Mullan WWTP reported the effluent pollutant concentrations in DMRs and results are characterized in Table 4. The tabulated data represents the quality of the effluent discharged from October 2013 to July 2019.

Table 4. Wastewater effluent characterization, October 2013 to July 2019.

Parameter	Units	# of Samples	Average Values	Maximum Values
BOD_5 Monthly	mg/L	70	5.0	19
BOD_5 Weekly	mg/L	70	7.5	40
BOD_5 Monthly	lb/day	70	5.0	25
BOD_5 Weekly	lb/day	70	9.1	72
BOD_5 Percent Removal	%	70	91	82.1 (minimum)
TSS Monthly	mg/L	70	5.7	20
TSS Weekly	mg/L	70	11.5	94
TSS Monthly	lb/day	70	5.9	34
TSS Weekly	lb/day	70	13.9	133
TSS Percent Removal	%	70	97	80 (minimum)
Alkalinity	mg/L	70	72	393
Cadmium, total recoverable, Monthly avg	µg/L	72	1.9	18.1
Lead, total recoverable, Monthly average	µg/L	72	9.8	88.5
E. coli geomean	#/100mL	70	9	43
E. coli instantaneous maximum	#/100mL	70	210	>2420
Nitrate + Nitrite as N, semiannual average	mg/L	13	13.2	27.8
Ammonia, as N, monthly average	mg/L	70	1.4	8.8
Ammonia, as N, daily maximum	mg/L	70	2.4	15.8
Ammonia, as N, monthly average	lb/day	70	1.4	9.0
Ammonia, as N, daily maximum	lb/day	70	2.2	11.8
TKN as N, semiannual average	mg/L	13	2.7	11.8
Oil & Grease	mg/L	12	<1	<1
DO instantaneous minimum	mg/L	70	5.1	2.7 (minimum)
Total phosphorus, semiannual average	mg/L	13	1.8	3.7
Temperature, monthly average	°C	70	11.2	17.7
Temperature, daily maximum	°C	70	12.7	18.8
TRC, monthly average	µg/L	70	6.8	30
TRC, daily maximum	µg/L	70	26.6	300
TRC, monthly average	lb/day	70	0.008	0.22
TRC, daily maximum	lb/day	70	0.052	1.22
Zinc, total recoverable, monthly average	µg/L	72	563	2,540
Flow, monthly average	MGD	70	0.11	0.5
Flow, daily maximum	MGD	69	0.17	0.73
Hardness	mg/L	70	122	182
Parameter	**Units**	**# of Samples**	**Minimum Value**	**Maximum Value**
pH	std units	140	6.5	8.2

2.2 Description of Receiving Water

The Mullan WWTP discharges to South Fork Coeur d'Alene River in the South Fork Coeur d'Alene Subbasin (HUC 17010302) Water Body Unit P-11, South Fork Coeur d'Alene River between Daisy Gulch and Canyon Creek (Assessment Unit ID17010302PN011_03). At the point of discharge, the South Fork Coeur d'Alene River is protected for the following uses (IDAPA 58.01.02.110.09):

- Cold water aquatic life (designated);
- Secondary contact recreation (designated); and

- Salmonid spawning (existing).

The outfall is located 275 feet upstream of the eastbound I-90 access bridge. For more information on the outfall see 2.15, Outfall Description. Other nearby point sources includes the Hecla Limited Lucky Friday Mine (Hecla) and Hercules Mine industrial and storm water sources. Nearby nonpoint sources of pollutants include urban runoff, silviculture, and mining. Nearby surface drinking water intakes include East Shoshone County Water District Mullan and Wallace facilities, however neither facility draw water from the South Fork Coeur d'Alene River. Section 2.2.1 of this fact sheet describes any receiving waterbody impairments.

The ambient background data used for this permit includes the following from receiving water data collected by the permittee and the Hecla Mining Company from October 2007 to April 2019.

Table 5. Ambient background data, October 2007 to April 2019.

Parameter	Units	Percentile	Value
Temperature	°C	95^{th}	14.54
pH	std units	5^{th} – 95^{th}	6.67-7.92
Hardness	mg/L of $CaCO_3$	minimum	25.8
Ammonia	mg/L	maximum	0.69
Total Phosphorus	mg/L	maximum	0.07

2.2.1 Water Quality Impairments

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations (WLAs) for point source discharges, which are set at levels designed to help restore the water body to a condition that supports existing and designated beneficial uses. Discharge permits must contain limits that are consistent with the assumptions and requirements of WLAs that have been assigned to the discharge in an EPA-approved TMDL.

The EPA-approved South Fork Coeur d'Alene Subbasin Assessment and TMDL (DEQ 2002) establishes WLAs for sediment (TSS). These WLAs are designed to meet narrative and numeric criteria and ultimately help restore the water body to a condition that supports existing and beneficial uses. The TSS WLA from the 2002 TMDL allocated to the Mullan facility is 12.3 tons/year (DEQ 2002, page 52). The effluent limits and associated requirements contained in the permit are set at levels that are consistent with the TMDL. At the time of permit issuance temperature was listed on the 303d list, however, there was no TMDL addressing the suspected metals and temperature impairment of the cold water aquatic life (CWAL) and salmonid spawning (SS) uses.

2.2.2 Critical Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits (WQBELs). In general, Idaho's water quality standards (WQS) require criteria be evaluated at the following low flow design conditions (See IDAPA 58.01.02.210.03) as defined in Table 6. The 1Q10 represents the lowest one day flow with a recurrence frequency of once in

10 years. The 7Q10 represents the lowest average seven consecutive day flow with a recurrence frequency of once in 10 years. The 30Q5 represents the lowest average 30 consecutive day flow with a recurrence frequency of once in five years. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows. The 30Q10 represents the lowest average 30 consecutive day flow with a recurrence frequency of once in 10 years.

Table 6. Low flow design conditions.

Criteria	Flow Condition	Critical Flow (cfs) January 1, 2007 to December 31, 2017	2013 Permit Critical Flow (cfs)
Acute aquatic life	1Q10	12.4	4.6
Chronic aquatic life	7Q10 or	14.3	5.8
Non-carcinogenic human health criteria	30Q5	18.0	6.6
Carcinogenic human health criteria	harmonic mean flow	38.3	15.0
Ammonia	30Q5 or 30Q10	18.0 or 16.2	6.6 and 6.4

Critical low flows were calculated from data collected 1,700 feet upstream from the Mullan Outfall 001. Hecla Limited Lucky Friday Mine monitors receiving water flow daily as an industrial discharge permit condition (ID00000175). Flow data from January 1, 2007 to December 31, 2017 were used. Data were collected using a pressure transducer and biannual calibration checks. The data were then run through DFlow to calculate critical low flows. For this permit, DEQ determined critical low flows are presented in Table 6. There are no nearby United States Geological Survey (USGS) gaging stations that have been active in recent decades.

The previous permit used the MOVE.2 method of extending stream flow records (Hirsch, 1982). There were only two years of overlapping data between station 12413040 (SF COEUR D ALENE R ABV DEADMAN GULCH NR MULLAN ID, hereafter referred to as Mullan) and 12413210 (SF COEUR D ALENE AT ELIZABETH PARK NR KELLOG ID, hereafter referred to as Elizabeth Park). The USGS Mullan station was only active from October 1, 1998 to April 30, 2000. The nearest downstream USGS gage, Elizabeth Park, has a record from August of 1987 to present and is roughly 17 miles downstream of Mullan WWTP outfall. The limited Mullan data resulted in less-accurate transformed data, despite a high correlation (91%). The additional Hecla Limited Lucky Friday Mine data results in the critical flows in Table 6 being greater than from those used in 2013. See Figure 1, below, for outfall and South Fork Coeur D'Alene River (SFCDAR) discharge relationships.

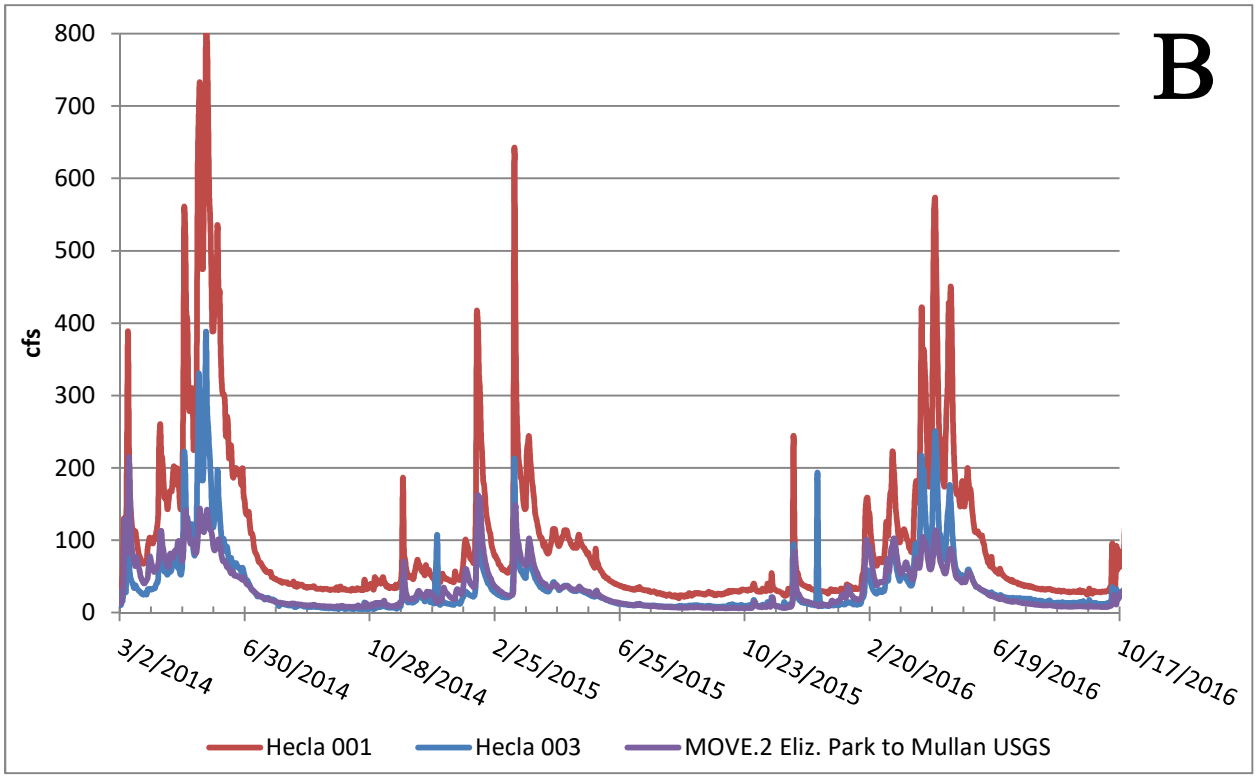

Figure 1. Critical Low Flows. A) Aerial photograph of the SFCDAR flowing east to west, the Mullan WWTP outfall, Hecla IPDES permitted outfalls, and the historical Mullan USGS gaging site. B) A two year snapshot of SFCDAR discharge recorded at Hecla outfalls 001(red) and 003 (blue). The previous permit used MOVE.2 from the Elizabeth Park gaging station, resulting in low flow discharge predictions (purple) that more closely resemble Hecla Outfall 003. Note that Outfall 001 is closest to the Mullan WWTP and the Outfall 001 low flow values are consistently larger than the MOVE.2 prediction.

2.3 Pollutants of Concern

DEQ may identify pollutants of concern (POC) for the discharge based on, but not limited to, those which:

- Have a technology-based limit (TBEL)
- Have an assigned WLA from a TMDL
- Had an effluent limit in the previous permit
- Are present in the effluent monitoring data reported in the application, DMRs, or special studies
- Are expected to be in the discharge based on the nature of the discharge
- Are impairing the beneficial uses of the receiving water

To determine POCs for further analysis, DEQ evaluated all pertinent and available information such as the permit application, previous DMRs, raw discharge data provided by the facility, and TMDLs. The wastewater treatment process for this facility includes activated sludge with aeration. Pollutants expected in the discharge from a facility with this type of treatment are:

- TSS
- BOD_5
- *E. coli* bacteria
- TRC
- pH
- Ammonia
- Cadmium
- Zinc
- Lead
- Temperature
- Copper

3 Effluent Limits and Monitoring

Table 7 presents the effluent limits and monitoring requirements in the 2013 permit. Table 8 and Table 9 present the effluent limits and monitoring requirements in the 2020 permit.

Table 7. 2013 Permit - Effluent Limits and Monitoring Requirements.

Parameter	Effluent Limits				Monitoring Requirements		
	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit[b]	Sample Location	Sample Frequency	Sample Type
BOD_5	mg/L	30	45	—	Influent & Effluent	1/week	24-hr composite
	lb/day	75	113	—			
	% removal	85 (min.)	—	—		1/month	Calculation[c]
TSS	mg/L	30	45	—	Influent & Effluent	1/week	24-hr composite
	lb/day	67.5	176	—			
	% removal	85 (min.)	—	—		1/month	Calculation[c]
E. coli[a]	#/100mL	126 (geomean)	—	576	Effluent	5/month	Grab
pH	std units	6.5 to 9.0			Effluent	5/week or continuous	Grab or measurement
TRC[b]	µg/L	18	—	45	Effluent	5/week or continuous	Grab or measurement
	lb/day	0.082	—	0.21			
Total Ammonia (as N)	mg/L	8.4	—	22	Effluent	1/week	24-hr composite
	lb/day	39	—	101			
Numeric Effluent Limits under Variance - Effective until midnight July 30, 2014							
Cadmium	µg/L	5.5	—	10.8	Effluent	1/month	24-hr composite
	lb/day	0.025	—	0.049			
Zinc	µg/L	1,610	—	3,682	Effluent	1/month	24-hr composite
	lb/day	7.4	—	17			
Interim Numeric Effluent Limits under Compliance Schedule							
Cadmium (7/31/2014 through 12/31/2034)	µg/L	5.5	—	10.8	Effluent	1/month	24-hr composite
	lb/day	0.025	—	0.049			
Lead (issuance through 12/31/2034)	µg/L	30	—	49	Effluent	1/month	24-hr composite
	lb/day	0.14	—	0.22			
Zinc (7/31/2014 through 12/31/2034)	µg/L	1,610	—	3,682	Effluent	1/month	24-hr composite
	lb/day	7.4	—	17			
Final Numeric Effluent Limits – Water Quality-Based – Effective January 1, 2035							
Cadmium	µg/L	0.68	—	1.36	Effluent	1/month	24-hr composite
	lb/day	0.0031	—	0.0062			
Lead	µg/L	16	—	32	Effluent	1/month	24-hr composite
	lb/day	0.073	—	0.15			
Zinc	µg/L	103	—	150	Effluent	1/month	24-hr composite
	lb/day	0.47	—	0.69			
Report Parameters							

Parameter	Effluent Limits				Monitoring Requirements		
	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit[b]	Sample Location	Sample Frequency	Sample Type
Flow	MGD	Report	—	Report	Influent or Effluent	Continuous	Measurement
Temperature	°C	Report	—	Report	Effluent	5/week	Grab
Dissolved Oxygen	mg/L	Report	—	Report	Effluent	1/month	Grab
Total Alkalinity	mg/L as $CaCO_3$	Report	—	Report	Effluent	1/month	24-hr composite
Hardness	mg/L as $CaCO_3$	Report	—	Report	Effluent	1/month	24-hr composite
Nitrate + Nitrate	mg/L	Report	—	Report	Effluent	2/year	24-hr composite
Oil & Grease	mg/L	Report	—	Report	Effluent	2/year	Grab
Total Phosphorus	mg/L	Report	—	Report	Effluent	2/year	24-hr composite
TKN	mg/L	Report	—	Report	Effluent	2/year	24-hr composite

a. The average monthly *E. coli* bacteria counts must not exceed a geometric mean of 126/100 ml.
b. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. The limits for total residual chlorine are not quantifiable using EPA approved analytical methods. The Minimum Level (ML) for chlorine is 50 µg/L. When the daily maximum and average monthly effluent concentration is below the ML, EPA will consider the permittee in compliance with the total residual chlorine limitations.
c. The monthly average percent removal must be calculated from the arithmetic mean of the influent concentration values and the arithmetic mean of the effluent concentration values for that month. Influent and effluent samples must be taken over approximately the same time period.

The 2013 permit also required:

- The permittee must report within 24 hours any violation of the maximum daily limits or instantaneous maximum limits for the following pollutants: *E. coli*, total residual chlorine, total ammonia (as N), cadmium, lead and zinc. Violations of all other effluent limits are to be reported at the time that discharge monitoring reports are submitted.

- The permittee must not discharge floating, suspended, or submerged matter of any kind in amounts causing nuisance or objectionable conditions or that may impair designated beneficial uses of the receiving water.

Table 8. 2020 Permit - Effluent Limits and Monitoring Requirements.

Parameter	Discharge Period	Units	Effluent Limits						Monitoring Requirements		Reporting Period (DMR Months)
			Monthly Average	Weekly Average	Monthly Geometric Mean	Instan-taneous Minimum	Instan-taneous Maximum	Daily Maximum	Sample Type	Sample Frequency	
Biochemical Oxygen Demand (BOD_5)	01/01 to 12/31	mg/L	30	45	—	—	—	—	24-hr composite	1/week	Monthly (All Months)
		lb/day	138	206	—	—	—	—	Calculation[a]		
BOD_5 Percent Removal	01/01 to 12/31	%	85 (minimum)	—	—	—	—	—	Calculation[b]	1/month	
Total Suspended Solids (TSS)	01/01 to 12/31	mg/L	30	45	—	—	—	—	24-hr composite	1/week	Monthly (All Months)
		lb/day	113	206	—	—	—	—	Calculation[a]		
	01/01 to 12/31	ton/yr	Annual TMDL WLA: 12.3						Calculation[a]	1/year	
TSS Percent Removal	01/01 to 12/31	%	85 (minimum)	—	—	—	—	—	Calculation[b]	1/month	
E. coli[c,d,e]	01/01 to 12/31	#/100 mL	—	—	126	—	—	—	Grab[f]	5/month	Monthly (All Months)
pH[e]	01/01 to 12/31	std. units	—	—	—	6.5	9.0		Grab[f]	5/week	Monthly (All Months)
Cadmium, total recoverable[e, g]	01/01 to 12/31	mg/L	0.00040	—	—	—	—	0.0012	24-hr composite	1/month	Monthly (All Months)
		lb/day	0.0018	—	—	—	—	0.0055	Calculation[a]		
Lead, total recoverable[e, g]	01/01 to 12/31	mg/L	0.010	—	—	—	—	0.029	24-hr composite	1/month	Monthly (All Months)
		lb/day	0.047	—	—	—	—	0.13	Calculation[a]		
Zinc, total recoverable[e, g]	01/01 to 12/31	mg/L	0.052	—	—	—	—	0.13	24-hr composite	1/month	Monthly (All Months)
		lb/day	0.24	—	—	—	—	0.61	Calculation[a]		

a. Calculation - Calculated means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in mgd) X Conversion Factor (8.34) = lb/day
b. % Removal= ([Influent](mg/L)-[Effluent](mg/L))/([Influent](mg/L))×100%
Braces "[ ]" indicate concentration of the attribute contained inside

c. Idaho's water quality standards for primary contact recreation include a single sample value of 576 #/100 mL. Exceedance of this value indicates likely exceedance of the 126 #/100 mL average monthly effluent limit; however, it is not an enforceable limit for a daily value, nor is exceeding this value a violation of water quality standards. If this value is exceeded at any point within the month, the facility should consider collecting more than the 5 samples per month required in this permit to determine compliance with the monthly geometric mean monitoring according to IDAPA 58.01.02.251.01.a.
d. The average monthly *E. coli* bacteria counts must not exceed a geometric mean of 126 #/100 ml based on a minimum of 5 samples taken every 3 – 7 days within a calendar month.
e. Exceedance of a maximum daily limit, instantaneous maximum limit, or instantaneous minimum limit requires 24-hour reporting in accordance with 2.2.7. For *E. coli*, the maximum daily threshold that triggers 24-hour reporting is 576 #/100 mL. Please see 2.2.7 for additional 24-hour reporting requirements.
f. A grab sample is an individual sample collected over a 15-minute period or less. Grab sample may be taken for effluents from holding ponds or other impoundments with a retention period greater than twenty-four (24) hours..
g. Parameter has a compliance schedule, see Table 9 below and Section 3.1 of the permit.

Table 9. Pollutants with interim effluent limits for Outfall 001.

Parameter	Interim Limit Period	Units	Effluent Limits		Monitoring Requirements		Reporting Period (DMR Months)
			Monthly Average	Daily Maximum	Sample Type	Sample Frequency	
Cadmium, total recoverable [c]	7/31/2014 to 12/31/2034	mg/L	0.0055	0.0108[a]	24-hr composite	1/month	Monthly (All Months)
		lb/day	0.025	0.049	Calculation[b]		
Lead, total recoverable [c]	10/01/2013 to 12/31/2034	mg/L	0.030	0.049[a]	24-hr composite	1/month	Monthly (All Months)
		lb/day	0.14	0.22	Calculation[b]		
Zinc, total recoverable [c]	7/31/2014 to 12/31/2034	mg/L	1.610	3.682[a]	24-hr composite	1/month	Monthly (All Months)
		lb/day	7.4	17	Calculation[b]		

a. Exceedance of a maximum daily limit, instantaneous maximum limit, or instantaneous minimum limit requires 24-hour reporting in accordance with 2.2.7. Please see 2.2.7 for additional 24-hour reporting requirements.
b. Calculation - Calculated means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in mgd) X Conversion Factor (8.34) = lb/day
c. Exceedance of a maximum daily limit, instantaneous maximum limit, or instantaneous minimum limit requires 24-hour reporting in accordance with 2.2.7. Please see 2.2.7 for additional 24-hour reporting requirements.

3.1 Basis for Effluent Limits

Regulations require that effluent limits in an IPDES permit must be either technology-based or water quality-based.

TBELs are set according to the level of treatment that is achievable using available technology. TBELs are based upon the treatment processes used to reduce specific pollutants. TBELs are set by the EPA and published as a regulation. DEQ may develop a TBEL on a case-by-case basis (40 CFR 125.3, IDAPA 58.01.25.302, and IDAPA 58.01.25.303).

WQBELs are calculated so the effluent will comply with the Surface Water Quality Standards (IDAPA 58.01.02) or the National Toxics Rule (40 CFR 131.36) applicable to the receiving water.

DEQ must apply the most stringent of these limits to each POC. These limits are described below.

3.2 Technology-Based Effluent Limits

IDAPA 58.01.25.302 requires that IPDES permits include applicable TBELs and standards, while 40 CFR 125.3(a)(1) states that TBELs for POTWs must be based on secondary treatment standards or as specified in 40 CFR 133. The following section explains secondary treatment effluent limits for the conventional pollutants discharged by POTWs: 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH. These effluent limits are given in 40 CFR 133 and are outlined in Table 10.

Table 10. Secondary treatment effluent limits.

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	—
pH	within the limits of 6.0 - 9.0 s.u.	

3.2.1 Mass-Based Limits

IDAPA 58.01.25.303.06 requires that effluent limits be expressed in terms of mass, except under certain conditions. IDAPA 58.01.25.303.02 requires that effluent limits for POTWs be calculated based on the design flow of the facility. The mass-based limits are expressed in pounds per day and are calculated as follows:

$$\textit{Mass based limit (lb/day)} = \textit{concentration limit (mg/l)} \times \textit{design flow (mgd)} \times 8.34^{1}$$

Since the design flow for this facility is 0.55 mgd, the technology-based mass limits for:

BOD_5

Average Monthly Limit = 30 mg/l × 0.55 mgd × 8.34 = 138 lbs/day

[1] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

Average Weekly Limit = 45 mg/l × 0.55 mgd × 8.34 = 206 lbs/day

See section 3.6 for antibacksliding reasoning for BOD_5 load limits.

TSS

Average Monthly Limit = 30 mg/l × 0.55 mgd × 8.34 = 138 lbs/day

Average Weekly Limit = 45 mg/l × 0.55 mgd × 8.34 = 206 lbs/day

See section 3.3.3 for WQBEL development and comparison to TBELs for TSS.

3.3 Water Quality-Based Effluent Limits

3.3.1 Statutory and Regulatory Basis

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limits in permits necessary to meet WQS. The IPDES regulation IDAPA 58.01.25.302.06 implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any WQS including narrative criteria for water quality. Effluent limits must also meet the applicable water quality requirements of affected States other than the State in which the discharge originates, which may include downstream States (IDAPA 58.01.25.103.03, IDAPA 58.01.25.302.06, see also CWA Section 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures that account for existing controls on point and non-point sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that WQS are met and must be consistent with any available TMDL WLA for the discharge. If there are no approved TMDLs that specify WLAs for this discharge, all of the WQBELs are calculated directly from the applicable WQS.

3.3.2 Reasonable Potential Analysis (RPA) and Need for Water Quality-Based Effluent Limits

DEQ uses the process described in the *Effluent Limit Development Guidance* (DEQ 2017) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria (WQC) for a given pollutant, DEQ compares the maximum projected receiving water concentration to the WQC for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a WQBEL must be included in the permit.

In some cases, a dilution allowance or mixing zone is permitted. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and within which certain water quality criteria may be exceeded (IDAPA 58.01.02.060). While the criteria may be exceeded within the mixing zone, the use and size of the mixing zone must be limited such that the waterbody as a whole will not be impaired, all designated uses are maintained and acutely toxic conditions are prevented.

The proposed mixing zones for this facility's pollutants are summarized in Table 11. The calculated limits based on the size of the mixing zones do not impede receiving water beneficial uses. At the mixing zone percentages below there are no reasonable potentials to cause or contribute to an exceedance of WQS.

Table 11. Authorized mixing zones for Outfall 001 at the Mullan WWTP.

Pollutant	Discharge Period	Authorized Mixing Zone (% of Critical Low Flow)			
		Aquatic Life		Human Health	
		Acute (1Q10)	Chronic (7Q10 TRC/ 30Q5 Ammonia)	Water and Fish (30Q5 or Harmonic Mean)	Fish Only (30Q5 or Harmonic Mean)
TRC	01/01 to 12/31	1% of 12.4 cfs	5% of 14.3 cfs	NA	NA
Ammonia, Total as N	01/01 to 12/31	2% of 12.4 cfs	10% of 18.0 cfs	NA	NA

All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.55 mgd (IDAPA 58.01.02.060.01.c) (see Appendix B).

In accordance with DEQ's Idaho Mixing Zone Implementation Guidance, a Level 2 mixing zone analysis was conducted (DEQ 2016). See Appendix B for the CORMIX analysis.

The RPA and WQBEL calculations were based on mixing zones shown in Table 11. The equations used to conduct the RPA and calculate the WQBELs are provided in Appendix B. If DEQ revises the allowable mixing zone before final issuance of the permit, the RPA and WQBEL calculations will be revised accordingly.

3.3.3 Reasonable Potential and Water Quality-Based Effluent Limits

The reasonable potential and WQBELs for specific parameters are summarized below. The calculations are provided in Appendix B.

3.3.3.1 Total Ammonia (as N)

Ammonia criteria are based on a formula that relies on the pH and temperature of the receiving water. Because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature, the criteria become more stringent as pH and temperature increase. The table below details the equations used to determine WQC for ammonia.

Table 12. Ammonia criteria.

Total ammonia nitrogen criteria (mg N/L):
Annual Basis
Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	14.5
2. Receiving Water pH:	7.92
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
OUTPUT	
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**6.52**
Chronic Criterion (CCC)	**2.72**

Acute Criteria Equation: Cold Water

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

Acute Criteria Equation: Warm Water

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

Chronic Criteria: Cold Water, Early Life Stages Present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN(2.85, 1.45 \cdot 10^{0.028(25-T)})$$

Chronic Criteria: Cold Water, Early Life Stages Absent

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet 1.45 \cdot 10^{0.028(25-T)}$$

Using the critical flows calcuated from Hecla Outfall 001, explained in section 2.2.2, there is no reasonable potential to cause or contribute to an exceedance of ammonia WQC with an authorized mixing zone. Therefore, the 2013 WQBEL for ammonia have been removed from the facility's effluent limits. The monitoring frequency remains the same. See Table 25 for the RPA calculations for ammonia, section 3.6.5 for antibacksliding analysis on ammonia and changes made since the 2005 RPA, and section 4.2 for effluent monitoring requirements for ammonia.

See Appendix B for reasonable potential and effluent limit calculations for ammonia.

DEQ's *Effluent Limit Development Guidance* (DEQ 2017) states that DEQ will use the 90th to 95th percentile of the ambient upstream receiving water temperature and pH to calculate ammonia criteria. Because the receiving water sample size of ammonia, pH, and temperature is less than 20 data points, DEQ determined that the 95th percentile temperature and pH were appropriate for the ammonia calculation.

3.3.3.2 Chlorine, Total Residual

The Idaho WQS at IDAPA 58.01.02.210.01.a. establish an acute criterion of 19 µg/L and a chronic criterion of 11 µg/L for the protection of aquatic life. An RPA showed that the discharge from the facility would not have the reasonable potential to cause or contribute to a violation of the chlorine WQC with the authorized mixing zone. Therefore, the 2013 WQBEL for chlorine has been removed from the facility's effluent limits. See Table 25 for the RPA calculations for chlorine, section 3.6.6 for antibacksliding analysis on chlorine and changes made since the 2005 RPA, and section 4.2 for effluent monitoring requirements for chlorine.

3.3.3.3 E. coli

The Idaho WQS states that waters of the State of Idaho that are designated for recreation (primary or secondary) are not to contain *E. coli* bacteria in concentrations exceeding a geometric mean of 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a 30-day period. A mixing zone is not appropriate for bacteria for waters designated for contact recreation. Therefore, the permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho WQS also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of WQS. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 mL (IDAPA 58.01.02.251.01.b.ii.). For

waters designated only for secondary contact recreation the "single sample maximum" value is 576 organisms per 100 mL (IDAPA 58.01.02.251.01.b.i.). When a single sample maximum, is exceeded, additional samples should be taken to assess compliance with the geometric mean criterion.

Monitoring of the effluent five times per month will ensure compliance with the criterion can be assessed. If the single sample maximum is exceeded, the permittee may choose to monitor more frequently than the permit requires, ensuring adequate disinfection and compliance with permit effluent limits exists.

Regulations at IDAPA 58.01.25.303.04 require that effluent limits for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. Additionally, the terms "average monthly limit" and "average weekly limit" are defined in IDAPA 58.01.25.010.06 and 07 respectively as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. Therefore, the permit monthly effluent limit is a geometric mean for *E. coli* of 126 organisms per 100 ml.

3.3.3.4 pH

The Idaho WQS, at IDAPA 58.01.02.250.01.a, require pH values of the receiving water to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH; therefore the most stringent WQC must be met before the effluent is discharged to the receiving water.

3.3.3.5 TSS

The 2002 South Fork Coeur d'Alene TMDL prescribes a sediment annual average WLA of 67.4 lb/day or 12.3 tons/year (Table 21, page 52, DEQ 2002). The TBELs for concentration and removal rate for TSS are the TBELs from 40 CFR 133.102 and have been included in the permit. The permit must consider mass limits derived from the TMDL and compare the mass limits to technology based mass limits. The text below demonstrates the average monthly limit (AML) WQBEL is more stringent (derived from the TMDL WLA) and the average weekly limit (AWL) TBEL is more stringent, and thus are the load limits used in the permit are derived from both WQBELs and TBELs.

In translating the TMDL WLA into permit limits, the ELDG and TSD procedures were followed. The first step in developing limits is to determine the time frame over which the WLAs apply. The South Fork Coeur d'Alene TMDL expresses the WLA as an annual load (12.3 tons/year). The TSS WLA can be expressed as an annual average using the following calculation:

$$\frac{12.3\ ton}{1\ year} \times \frac{2000\ lbs}{1\ ton} \times \frac{1\ year}{365\ days} = 67.4 \frac{lbs}{day}$$

This number is incorporated directly into the permit as an annual average limit.

Regulations at IDAPA 58.01.25.303.04.b require that permit limits for POTWs be expressed as average monthly limits (AMLs) and average weekly limits (AWLs), unless impracticable. The WLA must be statistically converted to an AML and AWL (also see Table 25 in Appendix B).

Calculating AML:
The AML can be calculated by setting the annual average equal to the chronic Long Term Average (LTA_c).
TSS TMDL WLA = LTA = 67.4 lbs/day

$$AML = LTA_m \times e^{(z_{95}\sigma_n - 0.5\sigma_n^2)}$$ *(from Equation 37 of the ELDG)*

Where:
CV = coefficient of variation = 0.73 (based on facility data from Oct 2013 -July 2019)
n = 4 (number of samples in a month)
$\sigma_4^2 = \ln(CV^2/n + 1) = \ln(0.86^2/4 + 1) = 0.125$
$\sigma_4 = 0.354$
Z = percentile exceedance probability for AML (95%) = 1.645
AML = 75.2 × exp[(1.645 × 0.354) - (0.5 × 0.125)]
AML = 67.4 × 1.69 = 113 lb/day

Calculating the AWL:
The AWL is calculated by multiplying the AML by the following relationship (from Table 5-3 of the TSD):

$$\text{AWL} = AML \times \frac{e^{[Z_{AWL} \times \sigma_{\frac{n}{4}} - 0.5 \times \sigma_{n/4}^2]}}{e^{[Z_{AML} \times \sigma_n - 0.5 \times \sigma_n^2]}}$$

Where:
CV = 0.73 (based on facility data from Oct 2013 – July 2019)
$\sigma_4^2 = \ln(CV^2/n + 1) = \ln(0.73^2/4 + 1) = 0.125$
$\sigma_4 = 0.354$
Z = percentile exceedance probability for AML (95%) = 1.645
n/4 = number of samples per week = 1
$\sigma_{n/4}^2 = \ln(CV^2/(n/4) + 1) = \ln(0.73^2/(4/4) + 1) = 0.125$
$\sigma_{n/4} = 0.654$
Z_{AWL} = percentile exceedance probability for AWL (99%) = 2.326
Z_{AML} = percentile exceedance probability for AML (95%) = 1.645

$$\text{AWL} = 67.4 \times \frac{\exp[(2.326 \times 0.654) - (0.5 \times 0.125)]}{\exp[(1.645 \times 0.354) - (0.5 \times 0.125)]}$$

AWL = 249 lbs/day
Limits derived from TBELs:

AML = 30 mg/l × 0.55 mgd × 8.34 = 138 lbs/day

AWL = 45 mg/l × 0.55 mgd × 8.34 = 206 lbs/day

Table 13. Comparison of TSS TBELs and WQBELs.

Parameter	Average Monthly Limit (lb/day)	Average Weekly Limit (lb/day)
TBEL	138	206
WQBEL	113	249
Most Stringent	113	206

The 2013 permit WQBELs are different than the values in Table 13 above. The 2013 WQBELs interpreted 2002 TMDL annual WLA as a monthly limit. For rationale on why the 2013 permit limits are not in the 2020 permit see section 3.6.2.

3.3.3.6 Total Metals & Total Hardness

The facility has a compliance schedule to meet limits for cadmium, lead, and zinc. The final effluent limits in the compliance schedule have changed since the 2013 permit because more hardness and flow data have been collected since the last permit was written, changing both the critical low flows, and the hardness associated with those low flows (Figure 2). The 2013 permit used 67 mg/L $CaCO_3$ to calculate limits for both the acute and chronic limits. The 67 mg/L was determined by taking a conservative estimate below the 5th percentile of all hardness values found below 100 cfs. In the 2020 permit two critical hardness values were calculated: an acute hardness of 56 mg/L and a chronic hardness of 53 mg/L. The hardness values used to calculate metals criteria in the 2020 permit were determined using a method described in the ELDG (DEQ 2017):

> "If sufficient data are available, an alternative would be to use the statistical relation (nonlinear regression) between hardness and flow to estimate the hardness at the design flow. DEQ recommends using at least 30 paired samples of flow and hardness over a range of flows, and the lower 95th-prediction limit on the regression estimate be used."

The 2020 permit used 1Q10 and 7Q10 critical flow data from the Hecla Outfall 001 recorded between 2007 and 2017, along with the updated power regression shown in Figure 2 to calculate hardness values at the respective flows. Hardness values in blue are from the upstream Mullan USGS gaging station, collected from 2007 to 2011 and the upstream Hecla Lucky Friday Mine outfall from 2007-2017. Hardness values in red are concentrations measured semi-annually during the past permit cycle (2014 to 2019). The red trend line is the Lower Prediction Limit (LPL) of the power regression at a 95% prediction interval. The hardness and flow variables were log-transformed to run LPL statistics in both Excel and ProUCL (see Appendix B), and power-transformed to extract critical hardness values. At the critical acute low flow (1Q10) of 12.4 cfs, the hardness LPL is 56 mg/L as $CaCO_3$. At the critical chronic low flow (7Q10) of 14.3 cfs, the hardness LPL is 53 mg/L as $CaCO_3$.

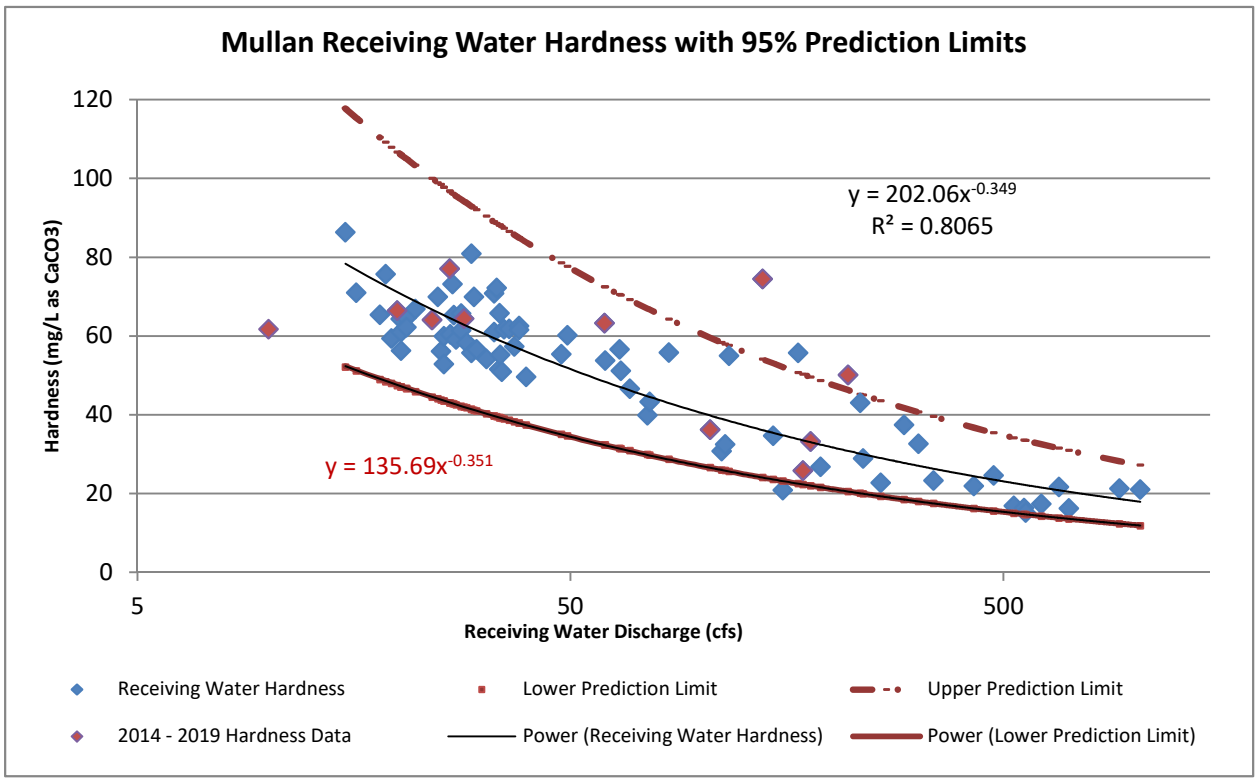

Figure 2. Hardness concentrations in the SFCDR at Mullan with associated discharge.

There are no mixing zones in the 2013 or 2020 permit for metals. Currently, cold water aquatic life beneficial use in the receiving water is impaired for "Combined Biota/Habitat Bioassessments." The 2016 Integrated Report states "…Cause Unknown has been delisted and replaced with Combined Biota/Habitat Bioassessments in Category 5. Metals are suspected as the cause of impairment." Since metals are suspected to be the cause of impairment, no mixing is authorized for metals at this time.

Using the appropriate site specific criteria equations, metals conversion factors, hardness, and flow data, reasonable potential to cause or contribute to a water quality exceedance exists for all three metals (see Table 25). The corrected final effluent limits are in Table 8. These limits may adjust slightly prior to 2035 as more effluent metals data and receiving water hardness data are collected.

The interim limits given in the 2013 permit for cadmium, lead, and zinc were based on facility performance, not the site specific criteria. The cadmium and lead concentrations in effluent from the past permit cycle (2004-2011) are not significantly different from the sample values used to create 2020 permit limits (2013-2018) (see Figure 3).

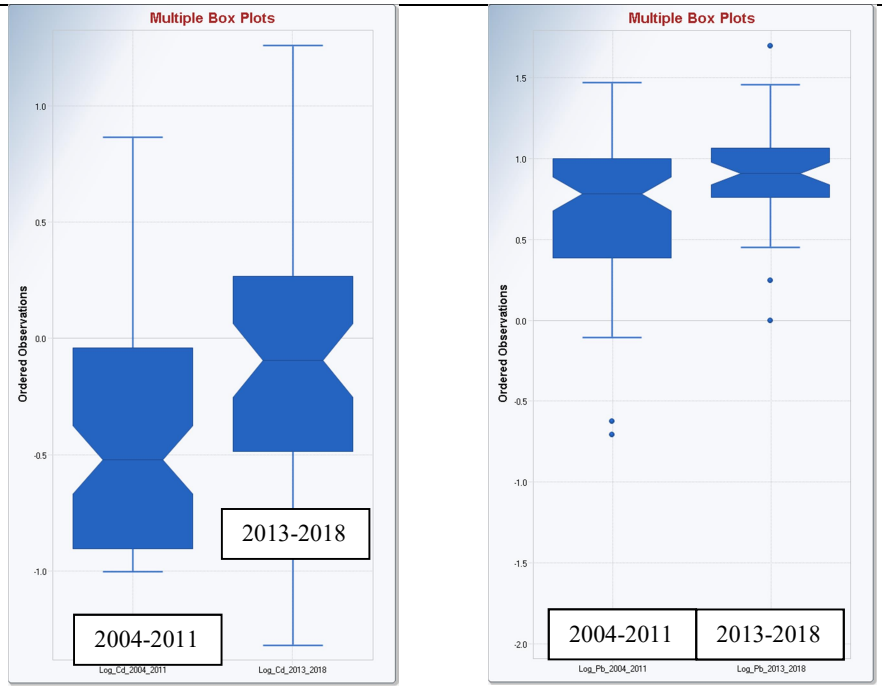

Figure 3. Box plots for the total cadmium (left) and total lead (right) log-transformed data sets.

The zinc concentrations in effluent are significantly lower than the sample values used to create the interim limits (Figure 4). Concentrations of zinc in the effluent are lowering, however, there were still four exceedances of the effluent limit for zinc resulting in a violation in the past 5 years. For this reason the interim limit will remain the same as the limit in the 2013 permit.

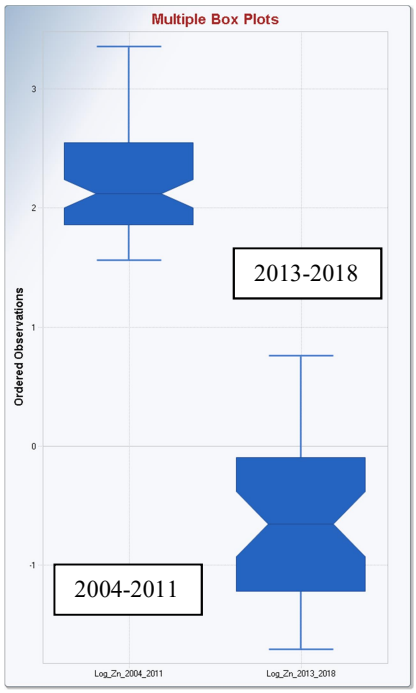

Figure 4. Box plots for the total zinc log-transformed data sets.

The toxicities of some metals vary with the hardness of the water. Therefore, the water quality criteria for these metals also vary with hardness. The hardness of the receiving water when mixed with the effluent is used to determine the water quality criteria for such metals. Since toxicity decreases (and numeric water quality criteria increase) as hardness increases, the RPA used the 5th percentile as a worst-case assumption for effluent hardness, and used the equation created from ambient hardness displayed in Figure 2. The hardness-dependent water quality criteria for the metals of concern are expressed as dissolved metal. The dissolved fraction of the metal is the fraction that will pass through a 0.45-micron filter. However, IDAPA 58.01.25.303.03 requires that effluent limits must be expressed as total recoverable metal. Total recoverable metal is the concentration of the metal in an unfiltered sample. To develop effluent limits for total recoverable metals which are protective of the dissolved metals criteria, "translators" are used in the equations to determine reasonable potential and derive effluent limits. The table below shows the applicable criteria for metals based on the mixed hardness and other toxic chemicals that were detected in the effluent. The potential of the discharge to have reasonable potential to cause or contribute to violations of Idaho's water quality criteria for the pollutants were determined in Table 25. See Appendix B for reasonable potential and effluent limit calculations for these pollutants.

Site-specific water quality criteria (SSC) that reflect local environmental conditions are allowed by federal and state regulations. 40 CFR § 131.11 provides states with the opportunity to adopt water quality criteria that are "…modified to reflect site specific conditions" (DEQ 2002). SSC were adopted for cadmium, lead and zinc by IDEQ in IDAPA 58.01.02.284 and approved by the EPA. The following equations are the SSC for cadmium, lead, and zinc.

Table 14. Site specific criteria equations for metals.

Parameter	CMC (µg/L)	CCC (µg/L)
Cadmium	**0.973** x exp(1.0166 x ln(hardness)-3.924)	**[1.101672-(ln(hardness) x 0.041838]** x exp(0.7852*LN(hardness)-3.49)
Lead	**1***exp(0.9402 x ln(hardness)+1.1834)	**1***exp(0.9402 x ln(hardness)-0.9875)
Zinc	**1***exp(0.6624 x ln(hardness)+2.2235)	**1***exp(0.6624 x ln(hardness)+2.2235)

The site specific conversion factors are highlighted in bold.

3.3.3.6.1 Metals Translators

The hardness-dependent water quality criteria for the metals of concern are expressed as dissolved metal, however, IDAPA 58.01.25.303.03 require that IPDES permit effluent limits must be expressed as total recoverable metal. To develop effluent limits for total recoverable metals which are protective of the dissolved metals criteria, "translators[2]" are used in the equations to determine reasonable potential and derive effluent limits. Translators can either be

[2] "The translator is the fraction of total recoverable metal in the downstream water that is dissolved; that is, the dissolved metal concentration divided by the total recoverable metal concentration. The translator may take one of three forms. (1) It may be assumed to be equivalent to the criteria conversion factors. (2) It may be developed directly as the ratio of dissolved to total recoverable metal. (3) Or it may be developed through the use of a partition coefficient that is functionally related to the number of metal binding sites on the adsorbent in the water column (i.e., concentrations of TSS, TOC, or humic substances)." (EPA, 1996)

site specific numbers or the default conversion factor[3] taken from WQS. EPA has published guidance related to the use of translators in NPDES permits in *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 1996). In the absence of site specific translators, the Metals Translator Guidance recommends the use of water quality criteria conversion factors as the default translators[4]. This permit has used the site specific conversion factors to calculate water quality criteria, as highlighted in Table 14. The conversion factors from the site specific criteria were used as metals translators to translate the permittee's effluent and receiving water data from "total recoverable", to "dissolved", in order to run RPA against the criteria in dissolved form. A conservative conversion factor of "1" was used for lead and zinc, which assumes all total recoverable metal is in a dissolved form, which is more toxic to aquatic life. DEQ is recommending a translator study be conducted (see section 5.5, below). With a site study, the facility would have both site specific conversion factors and translators.

3.4 Narrative Criteria

DEQ must incorporate the narrative criteria described in IDAPA 58.01.02.200 when it determines permit limits and conditions. Narrative WQC limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic attributes, or adversely affect human health.

The permit requires the permittee to comply with all narrative criteria.

3.5 Antidegradation

DEQ's antidegradation policy provides three levels of protection to water bodies in Idaho subject to Clean Water Act (CWA) jurisdiction (IDAPA 58.01.02.051).

- Tier I of antidegradation protection is designed to ensure that existing uses and the water quality necessary to protect those uses is maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). A Tier I review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier II protection applies to any water bodies considered to be high quality waters (where the water quality exceeds levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water) and provides that water quality will be maintained and protected unless allowing for lower water quality is deemed by the state

[3] "In the toxicity tests used to develop metals criteria for aquatic life, some fraction of the metal is dissolved and some fraction is bound to particulate matter. When the toxicity tests were originally conducted, metal concentrations were expressed as total. Some of the tests were repeated and some test conditions were simulated, for the purpose of determining the percent of total recoverable metal that is dissolved. Working from the premise that the dissolved fraction more closely approximates the biologically available fraction than does total recoverable, these conversion factors have the effect of reducing the water quality criteria concentrations. The conversion factors are predictions of how different the criteria would be if they had been based on measurements of the dissolved concentrations in all of the toxicity tests that were most important in the derivation of the criteria." (EPA, 1996)

[4] "As a reasonable worst case, however, it may be assumed that metal in the receiving environment would be biologically available to the same extent as during toxicity testing; and the conversion factors may be used as translators if a site-specific translator is not developed." (EPA, 1996)

as necessary to accommodate important economic or social development in the area. In allowing any lowering of water quality DEQ must ensure adequate water quality to protect existing uses fully and must assure that there will be achieved the highest statutory and regulatory requirements for all new and existing point sources (IDAPA 58.01.02.051.02; 58.01.02.052.08).

- Tier III protection applies to water bodies that have been designated by the Idaho Legislature as outstanding national resource waters and provides that water quality is to be maintained and protected (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ employs a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier I protection for that use unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

The Mullan WWTP discharges to South Fork Coeur d'Alene River in the South Fork Coeur d'Alene Subbasin (HUC 17010302) Water Body Unit P-11, South Fork Coeur d'Alene River between Daisy Gulch and Canyon Creek. At the point of discharge, the South Fork Coeur d'Alene River is protected for the following uses (IDAPA 58.01.02.110.09):

- Cold water aquatic life (designated);
- Secondary contact recreation (designated, unassessed); and
- Salmonid spawning (existing).

According to DEQ's 2016 Integrated Report, this AU is not fully supporting one or more of its assessed uses. The aquatic life use is not fully supported. Causes of impairment are unknown but metals are the suspected impairment. As such, DEQ will provide Tier I protection (IDAPA 58.01.02.051.01) for the aquatic life use. The contact recreation beneficial use is unassessed. DEQ must provide an appropriate level of protection for the contact recreation use using information available at this time (IDAPA 58.01.02.052.05.b). The secondary contact recreation use is assumed to be fully supported based on past data (see section 3.5.2), and DEQ will thus provide Tier II protection in addition to Tier I protection for secondary contact recreation.

3.5.1 Protection and Maintenance of Existing Uses (Tier I Protection)

A Tier I review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain existing and designated beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS.

Water bodies not supporting existing or designated beneficial uses must be identified as water quality-limited, and a TMDL must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations for point source discharges, which are set at levels designed to help restore the water body to a condition that supports

existing and designated beneficial uses. Discharge permits must contain limits that are consistent with wasteload allocations in the approved TMDL.

Prior to the development of the TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect uses (IDAPA 58.01.02.055.04). The EPA-approved South Fork Coeur d'Alene River TMDL (DEQ 2002) establishes a WLA for TSS. The effluent limits and associated requirements contained in the 2020 permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the wasteload allocations established in the South Fork Coeur d'Alene River TMDL. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the South Fork Coeur d'Alene River in compliance with the Tier I provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

3.5.2 High-Quality Waters (Tier II Protection)

The South Fork Coeur d'Alene River secondary contact recreation beneficial use has not been assessed; however, *E. coli* and metals monitoring (metals significant to human health, IDAPA 58.01.02.052.05.b) data collected in 1998, 2005, and 2017 indicate that recreation uses are fully supported (DEQ 1998, 2005, 2019). As such, the water quality relevant to secondary contact recreation of the South Fork Coeur d'Alene River must be maintained and protected, unless a lowering of water quality is insignificant or is deemed necessary to accommodate important social or economic development (IDAPA 58.01.02.052.08).

To determine whether degradation will occur, DEQ must evaluate how the discharge will affect water quality for each pollutant that is relevant to secondary contact recreation of the South Fork Coeur d'Alene River (IDAPA 58.01.02.052.06); these include *E. coli,* zinc, and any other toxic pollutant concentrations that may impact recreational uses such as fishing, and nutrients that may facilitate algal blooms**.** Effluent limits are set in the 2013 and 2020 permit for all these pollutants.

For a reissued permit, the effect on water quality is determined by looking at the difference in water quality that would result from the activity or discharge as authorized in the 2013 permit and the water quality that would result from the activity or discharge as proposed in the reissued permit (IDAPA 58.01.02.052.06.a). For a new permit, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit (IDAPA 58.01.02.052.06.a).

3.5.2.1 Pollutants with Limits in the 2013 and 2020 Permit

For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the 2013 permit or license (IDAPA 58.01.02.052.06.a.i), and the future discharge quality is based on the 2020 permit limits (IDAPA 58.01.02.052.06.a.ii). For the Mullan WWTP permit, this means determining the permit's effect on water quality based upon the limits for pollutants with limits in the 2013 and 2020 permits. Table 15 provides a summary of the 2013 and 2020 permit limits.

Table 15. Antidegradation comparison for protection of the secondary contact recreation beneficial use.

Pollutant	Units	2013 Permit			2020 Permit			Degradation[a]
		Monthly Average	Instant-aneous Maximum	Daily Maximum	Monthly Average	Instant-taneous Maximum	Daily Maximum	
Pollutants with limits in both the 2013 and 2020 permit								
E. coli	#/100 mL	126 (geomean)	576	—	126 (geomean)	—	—	No[b]
Zinc (final)	mg/L	0.103	—	0.150	0.052	—	0.13	No[b]
	lb/day	0.47	—	0.69	0.24	—	0.61	
Pollutants with limits no in both the 2013 and 2020 permit								
Phosphorus, Total as P	mg/L	Report	—	Report	Report	—	Report	NC

a. No = No degradation, Yes - S = Increase in pollutant load or concentration resulting in significant degradation, Yes - I = Increase in pollutant load or concentration resulting in insignificant degradation, No Change – NC = No change in pollutant load or concentration.
b. See discussion below.

The facility has a compliance schedule to meet limits for total zinc. The final effluent limits in the compliance schedule have changed since the 2013 permit because more hardness and flow data have been collected since the last permit was written, changing both the critical low flows, and the hardness associated with those low flows (Figure 2). Zinc concentrations have decreased in effluent since the 2013 permit issuance (Figure 4).

The 2020 permit does not include the max daily limit of 576/100mL for *E.coli* that was included in the previous permit. The Idaho WQS state that a water sample exceeding the single sample maximum values indicates a likely exceedance of the geometric mean criterion, although it is not a violation of WQS by itself. For waters designated for secondary contact recreation, the "single sample maximum" value is 576/100 mL (IDAPA 58.01.02.251.01.b.ii.). Removing the max daily limit does not affect the assimilative capacity of the river because the Idaho WQC for *E. coli* is a monthly geomean of 126/100mL, which is retained in this permit as the limit. Because the WQC for this particular parameter is a geometric mean and not an instantaneous concentration level, the single sample maximum is only an indicator of the potential WQC and not a direct limit. DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the South Fork Coeur d'Alene River in compliance with the Tier II provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.08).

3.6 Antibacksliding

Section 402(o) of the CWA and regulations at IDAPA 58.01.25.200 generally prohibit the renewal, reissuance, or modification of an existing IPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the existing permit (i.e., antibacksliding) but provides limited exceptions. For explanation of the antibacksliding exceptions refer to section 4.1 of the Effluent Limit Development Guidance (DEQ 2017).

DEQ compared the effluent limits in the 2013 and 2020 permits in Table 16, below.

Table 16. Comparison of 2013 and 2020 effluent limits.

Pollutant	Units	2013 Permit			2020 Permit			Change[a]
		Monthly Average	Weekly Average	Single Sample Limit	Monthly Average	Weekly Average	Single Sample Limit	
Pollutants with limits in both the 2013 and 2020 permit								
Five-Day BOD	mg/L	30	45	—	30	45	—	LS[b]
	lb/day	75	113	—	138	206	—	
	% removal	85		—	85	—	—	
TSS	mg/L	30	45	—	30	45	—	NC[c]
	lb/day	67.5	176	—	113	206	—	
	% removal	85	—	—	85	—	—	
pH	std units	6.5–9.0 all times			6.5–9.0 all times			NC
E. coli	no./100 mL	126	—	576	126	—	—[d]	LS
Ammonia, total (as N)	mg/L	8.4	—	22	8.4	—	22	NC
	lb/day	39	—	101	39	—	101	
Cadmium (final)	mg/L	0.00068	—	0.00136	0.00040	—	0.0012	MS[e]
	lb/day	0.0031	—	0.0062	0.0018	—	0.0055	
Lead (final)	mg/L	0.016	—	0.032	0.010	—	0.029	MS[e]
	lb/day	0.073	—	0.15	0.047	—	0.13	
Zinc (final)	mg/L	0.103	—	0.150	0.052	—	0.13	MS[e]
	lb/day	0.47	—	0.69	0.24	—	0.61	
Pollutants with limits in the 2013 permit								
Total Residual Chlorine	mg/L	0.018	—	0.045	Report	—	Report	LS[f]
	lb/day	0.082	—	0.21	Report	—	Report	
Pollutants with no limits in both the 2013 and 2020 permit								
Temperature	°C	Report	—	Report	Report	—	Report	NC
Hardness	mg/L	Report	—	Report	Report	—	Report	NC
TKN	mg/L	Report	—	Report	Report	—	Report	NC
Nitrate + Nitrite	mg/L	Report	—	Report	Report	—	Report	NC
Phosphorus, Total (as P)	mg/L	Report	—	Report	Report	—	Report	NC
Copper, Total	mg/L	—	—	—	Report	—	Report	NC

a. MS = More stringent pollutant load or concentration limit, LS = Less stringent pollutant load or concentration limit, NC = No change in pollutant load or concentration limit
b. See section 3.6.1 below for discussion of BOD_5 load limits.
c. See section 3.6.2 below for discussion of TSS limits
d. See section 3.6.3 below for discussion of *E. coli* limits
e. See section 3.6.4 below for discussion of metals limits
f. See section 3.6.6 below for discussion of TRC

An antibacksliding analysis was done for the BOD_5, TSS, *E. coli*, ammonia, TRC, and metals limits. All other permit limits in this 2020 permit do not deviate from the 2013 permit. The analysis for each of these parameters is detailed below.

3.6.1 BOD_5

The BOD_5 loads in the 2020 permit are higher than the BOD_5 loads in the 2013 permit. The TBEL derived load limits (BOD_5 does not have a water quality standard) have been 75 lb/day for the AML and 113 for the AWL since at least the 2004 permit. There have been significant upgrades to the WWTP, impacting its ability to treat BOD_5, as well as other pollutants (see section 2.1.2). A memorandum from the WWTP engineer states the updated design capacity of the WWTP is 218 lb/day of BOD_5 (JUB 2018). Load limit TBEL calculations for the AML and AWL of 138 lb/day and 206 lb/day are below that design capacity. The backsliding provision in IDAPA 58.01.25.200.02.a (material and substantial alterations or additions to the permitted facility occurring after permit issuance, which justify the application of a less stringent effluent limit) applies to this limit.

3.6.2 TSS

The TSS concentration limits have not changed between the 2013 and 2020 permit limits.

There is no difference in stringency between the 2013 and 2020 TSS permit limits, because the same TMDL WLA was used in both permits to derive WQBELs, but the 2013 permit improperly equated the TMDL annual WLA to the average monthly limit. The TMDL WLA is now set to the annual average limit. These limits were then compared to TBELs. The TMDL WLAs provide the annual limits the permittee must meet. This WLA is an average allocation for a specified time frame (January 1 to December 31). Permit limits based on WLAs should be expressed in a manner consistent with these averaging periods. Using the coefficient of variation (CV) of TSS load DMR data and the proposed sampling schedule, an average monthly load based on this WLA was calculated (Table 26, Appendix B). Backsliding is not occurring with these new limits as it is a correction of an implementation of the same TMDL WLA.

3.6.3 E. coli

The 2013 permit contains a maximum daily limit (i.e., single sample limit) of 576 #/100 mL. This limit has been removed in the permit under antibacksliding exceptions in IDAPA 58.01.25.200.03.c since the use is attained (i.e., the receiving water is not impaired for *E. coli*), and the resulting water quality effects are consistent with the state's anti-degradation policy (i.e., no degradation).

3.6.4 Metals

Final limits for cadmium, lead and zinc have changed (more stringent) from the 2013 permit due to new hardness and flow data RPA input changes, and subsequent limit calculations.

3.6.5 Ammonia, Total as N

New compliance data from 2013 to 2019 (effluent and receiving water ammonia, temperature, and pH) and the recalculated critical conditions in section 2.2.2 do not result in reasonable potential to cause or contribute to receiving water exceedances when a 10% mixing zone is authorized.

As stated above, the Mullan WWTP is currently undergoing phased upgrades and improvements. The improvements since 2005 specific to ammonia treatment include improvements includes a new secondary clarifier rake mechanism, fine bubble diffusers, rotary lobe blowers, new motor control center, replacing coating in the basin, adding a solids return to the aeration basin, and upgrading the supervisory control and data acquisition (SCADA) (JUB 2016, DEQ 2019). New compliance data from 2013 to 2019 and the more accurate critical conditions calculated in section 2.2.2 do not result in reasonable potential to cause or contribute to receiving water exceedances.

Because significant upgrades impact ammonia treatment and new data substantially changes the outcome of the RPA for ammonia, DEQ has removed the limits and replaced it with ammonia monitoring and will reevaluate the need for an effluent limit with the next permit cycle. These less stringent limits are allowed under the material and substantial alteration exception in IDAPA 58.01.25.200.02.a.

3.6.6 TRC

The Mullan WWTP is currently undergoing phased upgrades and improvements that impact chlorination and dechlorination. The first phase of improvements includes replacing influent pumps, replace effluent flow meter, upgrade the chlorine contact chamber, upgrade the dechlorination system, and upgrade the SCADA system to include flow-based chlorine injection (JUB 2016, DEQ 2019). New compliance data from 2013 to 2019 and the more accurate critical conditions calculated in section 2.2.2 do not result in reasonable potential to cause or contribute to receiving water exceedances.

Because significant upgrades impact chlorination and new data substantially changes the outcome of the RPA for chlorine, DEQ has removed the chlorine limit and replaced it with chlorine monitoring and will reevaluate the need for an effluent limit with the next permit cycle. Since the WWTP still uses chlorine for disinfection, a monitoring requirement is retained (EPA 1996). These less stringent limits are allowed under the material and substantial alteration exception in IDAPA 58.01.25.200.02.a.

4 Monitoring Requirements

Idaho regulations IDAPA 58.01.02 and 58.01.25 require that monitoring be included in permits to determine compliance with effluent limits and other permit restrictions. Monitoring may also be required to gather data to assess the need for future effluent limits or to monitor effluent impacts on receiving water quality. Permittees are responsible for conducting the monitoring and reporting the results on monthly DMRs and in annual reports.

4.1 Influent Monitoring

TSS and BOD_5 monitoring requirements are listed below in Table 17. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Table 17. Influent monitoring requirements for the 2020 permit.

Parameter	Monitoring Period	Units	Sample Frequency	Sample Type	Report	Reporting Period (DMR Months)
Flow	01/01 to 12/31	mg/L	1/week[a]	Recorded	Monthly Average	Monthly (All Months)
BOD_5	01/01 to 12/31	mg/L	1/week[a]	24-hr composite	Monthly Average	Monthly (All Months)
TSS	01/01 to 12/31	mg/L	1/week	24-hr composite	Monthly Average	Monthly (All Months)

a. The monthly average percent removal must be calculated from the arithmetic mean of the influent concentration values and the arithmetic mean of the effluent concentration values for that month. Influent and effluent samples must be taken over approximately the same time period.

4.1.1 Influent Monitoring Changes from the 2013 Permit

Monitoring parameters and frequencies have not changed relative to the 2013 permit.

4.2 Additional Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Pollutants that must be monitored but do not have effluent limits are presented in Table 18. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 18. Additional effluent monitoring for Outfall 001 for the 2020 permit.

Parameter	Monitoring Period	Units	Monthly Average	Daily Maximum	Instan-taneous Maximum	Sample Frequency	Sample Type	Reporting Period (DMR Months)
Flow	01/01 to 12/31	mgd	Report	Report	—	Continuous[a,b]	Recorded	Monthly (All Months)
TRC	01/01 to 12/31	mg/L	Report	Report	—	1/week	Grab[f]	Monthly (All Months)
Ammonia, Total as N	01/01 to 12/31	mg/L	Report	Report	—	1/week	24-hr composite	Monthly (All Months)
Temperature	01/01 to 12/31	°C	Report	Report	Report	Continuous [a, b, c]	Recorded	Monthly (All Months)
Hardness	01/01 to 12/31	mg/L as $CaCO_3$	Report	Report	—	1/month	24-hr composite	Monthly (All Months)
Nitrate + Nitrite	01/01/2023 to 11/30/2025 ONLY	mg/L	Report	Report	—	1/month	24-hr composite	Monthly (All Months)
TKN	01/01/2023 to 11/30/2025 ONLY	mg/L	Report	Report	—	1/month	24-hr composite	Monthly (All Months)
Phosphorus, Total as P	01/01 to 12/31	mg/L	Report	Report	—	1/month	24-hr composite	Monthly (All Months)
Nitrate + Nitrate	01/01 to 12/31	mg/L	Report	Report	—	1/quarter[d]	24-hr composite	Quarterly (March, June, Sept, Dec)
TKN	01/01 to 12/31	mg/L	Report	Report	—	1/quarter[d]	24-hr composite	Quarterly (March, June, Sept, Dec)
E. coli	01/01 to 12/31	#/100mL	—	—	Report[e]	5/month	Grab[f]	Monthly (All Months)
Copper, Total	01/01 to 12/31	mg/L	Report	Report	—	1/ quarter[d]	24-hr composite	Quarterly (March, June, Sept, Dec)
Copper, Total	01/01/2023 to 11/30/2025 ONLY	mg/L	Report	Report	—	1/month	24-hr composite	Monthly (All Months)

a. Continuous means measurements recorded once every 60 minutes except for brief lengths of time for calibration, power failure, or unanticipated equipment repair or maintenance.
b. DEQ acknowledges that uninterrupted data collection is not guaranteed due to vandalism, theft, damage, disturbance, power interruption, etc. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must monitor grab measurements daily between 8 a.m. and 5 p.m. or describe frequency when continuous monitoring is not possible until continuous monitoring equipment is redeployed.

c. Temperature data must be recorded using DEQ-approved temperature monitoring devices set to record at 60-minute or more frequent intervals. DEQ's Protocol for Placement and Retrieval of Temperature Data Loggers contains protocols for continuous temperature sampling. This document is available online at: http://www.deq.idaho.gov/media/487602-wq_monitoring_protocols_report10.pdf. Report the following temperature monitoring data on the DMR: maximum daily average

d. Monthly sampling of Total Copper, Nitrate + Nitrite, and TKN can be reported in the quarterly DMR between 01/01/2023 and 11/30/2025. Duplicate sampling is not required.

e. Reporting is required within 24 hours of discovery of a single sample value greater than 576 #/100 ml. A value greater than this indicates likely exceedance of the geometric mean criterion, but is not by itself a violation of water quality standards or permit effluent limits.

f. A grab sample is an individual sample collected over a 15-minute period or less.

4.2.1 Effluent Monitoring Changes from the 2013 Permit

Monitoring frequencies for effluent parameters have been changed relative to the 2013 permit. The dissolved oxygen, oil and grease, and alkalinity parameter have been removed from effluent monitoring. Changes are presented in Table 19, below.

Table 19. Changes in effluent monitoring frequency from 2013 permit.

Parameter	2013 Permit	2020 Permit	Rationale
Flow	Continuous	Continuous	No change
TRC	5/week	1/week	There is no longer RPTE WQS with a mixing zone
Temperature	5/week	Continuous	Increased frequency of temperature monitoring to be used for watershed impairment evaluation.
Hardness	1/month	1/month	No change
E. coli	5/month	5/month	No change
Copper, Total	—	1/month	Copper is a new POC and needs to be evaluated for reasonable potential to cause or contribute to an exceedance.
Dissolved Oxygen	1/month	Removed	Compliance with BOD_5 will ensure compliance with dissolved oxygen.
Alkalinity, Total	1/month	Removed	Alkalinity is not used in RPA calculations or needed for future nutrients TMDL development.
Oil and Grease	2/year	Removed	Oil and grease has been non-detect in all samples taken since 2013.
Nitrate + Nitrate	2/year	1/quarter and 1/month for 3 years	Increased frequency of nutrient parameters used for downstream nutrient impairment evaluation. This permit cycle splits Nitrate + Nitrite and TKN sampling frequency between 1/month and 1/quarter to reduce the sampling cost burden on the permittee.
Total Phosphorus	2/year	1/month	
TKN	2/year	1/quarter and 1/month for 3 years	

4.2.2 Total Metals & Total Hardness

Due to anecdotal knowledge of domestic water source water with copper, the permittee must monitor for associated POCs. POCs include the hardness and total copper. To adequately characterize copper in the effluent for the next permit cycle, the permit requires monitoring of the specified metals once per month, paired with total hardness, for the entirety of the permit.

4.2.3 Total Residual Chlorine

The 2013 permit required monitoring for TRC once per week. Since the facility upgrade in 2013, TRC does not have reasonable potential to cause or contribute to a water quality exceedance. To adequately characterize TRC in the effluent for the next permit cycle, this permit requires TRC monitoring once per week for the entirety of the permit.

4.3 Receiving Water Monitoring

In general, receiving water monitoring may be required for POCs to assess the pollutant specific assimilative capacity of the receiving water. In addition, receiving water monitoring may be

required for pollutants for which the WQC are dependent and to collect data for TMDL development if the facility discharges to an impaired water body.

Table 20 presents the receiving water monitoring requirements for the permit. The Mullan WWTP should continue receiving water monitoring at the established locations. Receiving water monitoring results must be submitted with the DMR. A downstream receiving water monitoring location must be approved by DEQ. Receiving water monitoring results must be submitted with the DMR. Receiving water monitoring will take place year-round.

Table 20. Receiving water monitoring requirements in 2020 permit for SFCDR Upstream Monitoring Site.

Parameter	Monitoring Period	Units	Monthly Average	Instantaneous Minimum	Instantaneous Maximum	Maximum Daily Average	Sample Frequency	Sample Type	Reporting Period (DMR Months)
Flow[a]	01/01 to 12/31	cfs	Report	Report	—	—	Continuous [b, c]	Recorded	Monthly (All Months)
Temperature[a, f]	01/01 to 12/31	°C	Report	—	Report	Report	Continuous [b, c, d]	Recorded	Monthly (All Months)
pH [e, f]	01/01 to 12/31	std units	—	Report	Report	—	Quarterly[g]	Grab[e]	Quarterly (March, June, September, December)
Ammonia, Total as N[f]	01/01 to 12/31	mg/L	Report	—	—	Report	Quarterly[g]	Grab[e]	Quarterly (March, June, September, December)
Total Phosphorus	01/01 to 12/31	mg/L	Report	—	—	Report	Quarterly[g]	Grab[e]	Quarterly (March, June, September, December)
Copper, Dissolved	01/01 to 12/31	mg/L	Report	—	—	Report	Quarterly[g]	Grab[e]	Quarterly (March, June, September, December)
Hardness	01/01 to 12/31	mg/L as $CaCO_3$	Report	—	—	Report	Quarterly[g]	Grab[e]	Quarterly (March, June, September, December)

a. Monitoring of this parameter is not required until 09/01/2021. Reporting the Monthly Average and Instantaneous Minimum of Hecla Lucky Friday Mine Outfall 001 receiving water flow data is permissible. If Hecla Outfall 001 receiving water flow monitoring is discontinued, the flow monitoring shall be the responsibility of the permittee.
b. Continuous means measurements recorded once every 60 minutes except for brief lengths of time for calibration, power failure, or unanticipated equipment repair or maintenance.
c. DEQ acknowledges that uninterrupted data collection is not guaranteed due to vandalism, theft, damage, disturbance, power interruption, etc. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must monitor grab measurements daily between 8 a.m. and 5 p.m. or describe frequency when continuous monitoring is not possible until continuous monitoring equipment is redeployed.
d. Temperature data must be recorded using DEQ-approved temperature monitoring devices set to record at 60-minute or more frequent intervals. DEQ's Protocol for Placement and Retrieval of Temperature Data Loggers contains protocols for continuous temperature sampling. This document is available online at: http://www.deq.idaho.gov/media/487602-wq_monitoring_protocols_report10.pdf. Report the following temperature monitoring data on the DMR: maximum daily average.
e. Grab means an individual sample collected over a fifteen (15) minute, or less, period
f. pH and temperature must be analyzed within 15 minutes of sample collection.
g. Quarters are defined as: January 1-March 31; April 1-June30; July 1-September 30; and October 1-December 31.

Table 21. Receiving water monitoring requirements for 2020 permit for SFCDR Downstream Monitoring Point.

Parameter[a]	Monitoring Period	Units	Monthly Average	Instantaneous Minimum	Instantaneous Maximum	Sample Frequency	Sample Type	Reporting Period (DMR Months)
pH	01/01 to 12/31	std units	—	Report	Report	Monthly	Grab[b, c, d]	Monthly (All Months)
Temperature	01/01 to 12/31	°C	Report	—	—	Monthly	Grab[c , d]	
Dissolved Calcium (Ca^{2+})	01/01 to 12/31	mg/L	Report	—	—	Monthly	Grab[c]	
Dissolved Magnesium (Mg^{2+})	01/01 to 12/31	mg/L	Report	—	—	Monthly	Grab[c]	
Dissolved Sodium (Na^{+})	01/01 to 12/31	mg/L	Report	—	—	Monthly	Grab[c]	
Dissolved Potassium (K^{+})	01/01 to 12/31	mg/L	Report	—	—	Monthly	Grab[c]	
Dissolved Copper	01/01 to 12/31	ug/L	Report	—	—	Monthly	Grab[c]	
Sulfate (SO_4^{-})	01/01 to 12/31	mg/L	Report	—	—	Monthly	Grab[c]	
Chloride (Cl^{-})	01/01 to 12/31	mg/L	Report	—	—	Monthly	Grab[c]	
Alkalinity	01/01 to 12/31	mg/L as $CaCO_3$	Report	—	—	Monthly	Grab[c]	
Dissolved Organic Carbon	01/01 to 12/31	mg C/L	Report	—	—	Monthly	Grab[c]	

a. Monitoring of these parameters is not required until 07/01/2023. Monitoring must continue through 07/01/2025 or until 24 monthly samples are collected.
b. The permittee may choose to collect pH data using a recording device or grab sample. The recording device must be set to record at 60-minute or more frequent intervals for a 24 hour period, once per month. pH grab samples must be taken between 5 a.m. and 8 a.m. on the same day as sample collection of other downstream receiving water parameters.
c. Grab means an individual sample collected over a fifteen (15) minute, or less, period.
d. pH and temperature must be analyzed within 15 minutes of sample collection if collected as a grab sample.

Monitoring downstream was created to collect data for the copper biotic ligand model, which can be used in the next permit cycle to evaluate copper toxicity.

4.3.1 Receiving Water Monitoring Changes from the 2013 Permit

Monitoring frequency for parameters has been changed relative to the 2013 permit. Changes in monitoring are presented in Table 22, below.

Table 22. Changes in Receiving Water monitoring frequency from 2013 permit.

Parameter	2013 Permit	2020 Permit	Rationale
River discharge	Continuous	Continuous	No change
Temperature	Continuous/Semi-annual	Continuous	Receiving water temperature used in conjunction with ammonia sampling, and for future temperature TMDL development
pH[c]	2/year	Quarterly	Receiving water pH used in conjunction with ammonia sampling
Total Ammonia (as N)	2/year	Quarterly	Necessary for future nutrient TMDL development
Total Phosphorus	2/year	Quarterly	Necessary for future nutrient loading estimates in the receiving water
Copper, Dissolved	-	Quarterly	Copper data will support copper limit development in addition to downstream copper BLM data
Hardness	2/year	Quarterly	Used to calculate hardness dependent metal criteria
All Table 21 Parameters	-	Monthly	Copper is a POC, downstream receiving water data will be used to evaluate copper toxicity using the Biotic Ligand Model

All downstream monitoring must meet the requirements of the DEQ document Implementation Guidance for the Idaho Copper Criteria for Aquatic Life Using the Biotic Ligand Model (2017). This document can be accessed at *http://www.deq.idaho.gov/media/60180840/58-0102-1502-implementation-guidance-idaho-copper-criteria-aquatic-life-1117.pdf.* Specifics regarding analysis method, preservative, holding times, and reporting limits can be found in section 5 of the guidance document.

4.3.2 Copper Biotic Ligand Model (BLM) Parameters

Hardness-dependent copper criteria do not take into account the effects of other physicochemical properties that affect toxicity, leading to hardness-dependent copper criteria being either overprotective or under protective of aquatic life (DEQ 2017). The biotic ligand model (BLM) based criteria outlined in the US Environmental Protection Agency's (EPA's) revised national recommended freshwater aquatic life criterion for copper takes into consideration copper toxicity influenced by a wide variety of water characteristics. Therefore, DEQ has updated the copper criteria for aquatic life to the EPA-recommended 304(a) criteria (EPA 2007a).

In order to use the BLM, the input parameters necessary from the receiving water are temperature, pH, dissolved copper, dissolved organic carbon (DOC), major cations (calcium, magnesium, sodium, and potassium), major anions (sulfate and chloride), and alkalinity. These parameters must be sampled using the frequency and methodology requirements indicated in

Implementation Guidance for the Idaho Copper Criteria for Aquatic Life Using the Biotic Ligand Model (DEQ 2017).

4.4 Permit Renewal Monitoring

The permit renewal monitoring requires data collected to characterize the effect of the effluent on the South Fork Coeur D'Alene River. At a minimum, three samples of the final wastewater effluent for the parameters listed in Table 23 and Table 24 are required so that DEQ can assess the surface water impacts.

Table 23. Effluent monitoring required for all permit renewals.

Parameter	Units	Sample Type	Report
pH	std units	Grab	Minimum and maximum value
Flow	mgd	Continuous	Maximum daily value, average daily value, number of samples
Temperature	°C	Grab	
BOD_5	mg/L	24-hour composite	Maximum daily value, average daily value, analytical method and ML or MDL
TSS	mg/L	24-hour composite	
E. coli	#/100 mL	Grab	

The facility has a design flow greater than 0.1 mgd and must also complete three samples of effluent testing for the parameters in Table 24.

Table 24. Effluent testing required for permit renewals of facilities with flow greater than 0.1 mgd.

Parameter	Units	Sample Type[a]	Report
Ammonia (as N)	mg/L	24-hour composite	Maximum daily value, average daily value, analytical method and ML or MDL
Chlorine, Total Residual	mg/L	Grab	
Dissolved oxygen	mg/L	Grab	
Total Kjeldahl Nitrogen	mg/L	24-hour composite	
Nitrate plus Nitrite	mg/L	24-hour composite	
Oil and grease	mg/L	Grab	
Phosphorus, Total (as P)	mg/L	24-hour composite	
Total dissolved solids	mg/L	24-hour composite	

a. Unless specified otherwise at 40 CFR Part 136.

An individual sample includes all parameters in Table 23 and Table 24. For parameters in which a grab sample must be collected, each grab sample must be analyzed individually. For parameters requiring a 24-hour composite sample, only one analysis of the composite of aliquots is required for each sample.

The permittee must conduct full scans of the final effluent in April, August, and December during the third year of the permit cycle.

The permittee must continue the schedule above every third year until a new permit is issued.

5 Special Conditions

5.1 Compliance Schedule

IDAPA 58.01.25.305 allow for compliance schedules in IPDES permits to provide additional time for permittees to achieve compliance. The permit includes a compliance schedule for cadmium, lead, and zinc which is continued from the 2013 permit.

5.2 Facility Capacity

The 2013 EPA fact sheet stated influent TSS, influent BOD_5, and flow (from 2004 – 2013) consistently exceeded the design criteria throughout the permit term for BOD_5 and TSS. The 2013 permit required "the permittee to re-evaluate the capacity of the treatment process and, if possible, establish new design criteria based on the present influent characteristics, or begin planning to address new capacity." A memorandum compiled by JUB (JUB 2018) established corrected design criteria for BOD_5, TSS, and flow. These corrected capacity values are 218 lb/day of BOD_5, 218 lb/day of TSS, and an average daily flow of 0.6 mgd. Note, the monthly average flow of 0.55 mgd was used in permit calculations since the monthly design flow is most appropriate for limit development.

Despite the increased design criteria, the Mullan WWTP is exceeding the 85% trigger to begin facility planning because of TSS under the 2013 permit (12 month rolling average percent of design from June 2018 through June 2019: 102%[5]). The WWTP BOD_5 12-month rolling average is 71% in the same timeframe. The 12 month rolling average concentration for TSS and BOD_5 during that timeframe is 308.59 mg/L and 196.95 mg/L, respectively. This equates to average day loading of 225 lb/day for TSS and 153 lb/day for BOD_5. According to *Wastewater Engineering, Treatment and Resource Recovery*, Fifth Edition (Metcalf & Eddy. 1994), typical domestic wastewater concentrations at medium strength for TSS and BOD_5 are 195 mg/L and 200 mg/L, respectively. The permittee must assess whether an update to the facility plan is necessary.

[5] Note that DEQ guidance states the trigger for a facility plan update occurs when the actual flow or influent BOD_5 or TSS load, or load for any other design capacity parameter, exceeds the maximum design capacity for any two months during a rolling 12-month period (see the IPDES User's Guide to Permitting and Compliance Volume 2, DEQ 2017). This trigger in included in the permit.

5.3 Nondomestic Waste Management

The permittee has nonsignificant, nondomestic (industrial/commercial) users, which are neither subject to the pretreatment standards in 40 CFR 405 through 471, nor meet any of the criteria of a significant industrial user (SIU) as specified in 40 CFR 403.3(v), and therefore, DEQ does not require an authorized pretreatment program. The permittee must ensure that pollutants from nondomestic wastes discharged to their system do not negatively impact system operation or pass through the wastewater treatment facility. The permittee must not authorize indirect discharges of pollutants that would inhibit, interfere with, or otherwise be incompatible with operation of the wastewater treatment works, including interference with the use or disposal of municipal sludge.

5.4 Metals Translator Study

EPA has published guidance related to the use of translators in NPDES permits in *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 1996). DEQ recommends Mullan WWTP conduct a metals translator study (optional) in accordance with the EPA guidance because the criteria for dissolved lead and dissolved zinc were developed from site specific data, and there was no need to develop conversion factors. The conversion factor of "1" indicates a conservative assumption that all total recoverable metal is in a dissolved form, which is more toxic to aquatic life. If developed, a work plan for the study must be uploaded to the E-Permitting site by 10/01/2022 for DEQ approval. Approval will be based on agreement with the EPA translator development guidance.

6 Standard Conditions

Section 4 of the permit contains standard regulatory language that must be included in all IPDES permits. DEQ bases the Standard Conditions on state and federal law and regulations. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

6.1.1 Quality Assurance Project Plan

In accordance with IDAPA 58.01.25.300.05, permittees are required to develop procedures to ensure that the monitoring data submitted is accurate and explain data anomalies if they occur. The permittee is required to develop, maintain, and implement a QAPP. The quality assurance project plan (QAPP) shall consist of standard operating procedures for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and made available to DEQ upon request.

6.1.2 Operation and Maintenance Manual

The permit requires the Mullan WWTP to properly operate and maintain all facilities and systems of conveyance, treatment, and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times.

The permittee is required to maintain and implement an operation and maintenance plan for their facility. The plan must be retained on site and made available to DEQ upon request.

6.1.3 Emergency Response Plan

The permittee must maintain and implement an emergency response plan that identifies measures to protect public health and the environment. At a minimum, the plan must include mechanisms for the following:

1. Ensure that the permittee is aware (to the greatest extent possible) of all overflows from portions of the collection system over which the permittee has ownership or operational control as well as any unanticipated treatment unit bypass or upset that may exceed any effluent limit in the permit.
2. Ensure that reports of an overflow or of an unanticipated bypass or upset that may exceed any effluent limit in this permit are immediately dispatched to appropriate personnel for investigation and response.
3. Ensure immediate notification to DEQ of any noncompliance that may endanger public health or the environment and identify the public health district and other officials who will receive immediate notification for items that require 24-hour reporting in section 2.2.7 of the permit.
4. Ensure that appropriate personnel understand, are appropriately trained on, and follow the Emergency Response Plan; and
5. Provide emergency facility operation.

7 Compliance with other DEQ Rules

7.1 Operator's License

The permittee must meet the requirements and operator license levels listed in the wastewater rules at IDAPA 58.01.16.203 for the type(s) of operations at the facility.

7.2 Sludge/Biosolids

DEQ separates wastewater and sludge permitting for the purposes of regulating biosolids. DEQ may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR 503 and the requirements of Idaho's Wastewater Rules (IDAPA 58.01.16.480 and 650). The 503 regulations are self-implementing, and facilities must comply with them whether or not a permit has been issued. Idaho's Wastewater Rules require a POTW to have the capability to process sludge accumulated on site in preparation for final disposal or reuse (IDAPA 58.01.16.480 and 58.01.16.650). Operations of these sludge processing, storage, and disposal activities must comply with the facility's O&M manual.

8 Permit Expiration or Modification

The permit will expire five years after the effective date.

DEQ may modify a permit before its expiration date only for causes specified in IDAPA58.01.25.201. A modification other than a minor modification requires preparing a permit that incorporates the proposed changes, preparing a fact sheet, and conducting a public review period. Only the permit conditions subject to the modification will be reopened when a permit is modified. All other conditions of the existing permit remain in effect. Modifying a permit does not change the expiration date of the original permit.

9 References for Text and Appendices

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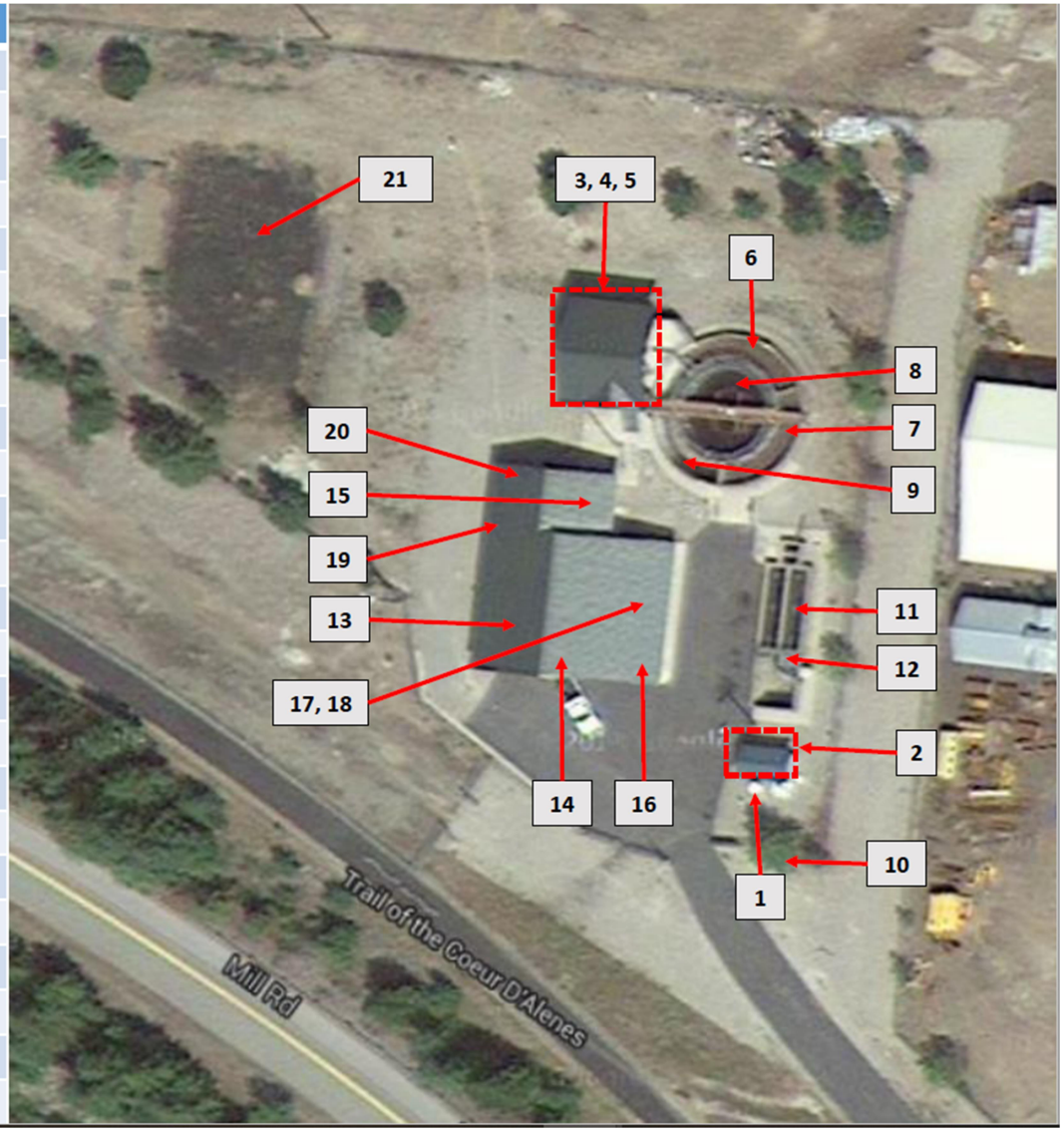
Appendix A. Facility Maps/Process Schematics

Item	Description
1	Influent Lift Station
2	Lime Auger & Storage
3	Primary Bar Screens
4	Secondary Bar Screens
5	Grit Channel
6	Aeration Basin 1
7	Aeration Basin 2
8	Secondary Clarifier
9	Aerated Solids Holding Basin
10	Flow Meter
11	Chlorine Contact Chamber
12	Dechlorination Basin
13	Maintenance Facility
14	Chlorination System
15	Dechlorination System
16	Laboratory
17	Plant Controls
18	Blowers
19	Generator
20	RAS/WAS Pumping
21	Solids Drying Beds (Abandoned)




South Fork Sewer District
Mullan
0 100 200
Feet
Legend
Lift Stations
Manhole
Cleanout
Valve
Non-district Manhole
Septic Tanks
Town Boundaries
Service Connections
Non-district Lines
Effluent Lines
Pressure Lines
2 inch
4 inch
10 inch
Unknown size
Gravity Lines
4 inch
6 inch
8 inch
10 inch
12 inch
15 inch
18 inch
21 inch
24 inch
30 inch
Unknown size
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S-13
S-13-1
S-14
S-15
S-16
S-17
S-18
S-19
S-20
S-21
S-22
S-23
S-24
S-25
S-26
JUB


Mullan WWTP #9 LiftStation
S-1
S-2
S-3
S-4
S-5
S-6
S-7
S-8
S-9
S-10
S-11
S-12
MULLAN
South Fork Sewer District
Mullan
0 100 200
Feet
Legend
Lift Stations
Manhole
Cleanout
Valve
Non-district Manhole
Septic Tanks
Town Boundaries
Service Connections
Non-district Lines
Effluent Lines
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2 inch
4 inch
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Unknown size
Gravity Lines
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Unknown size
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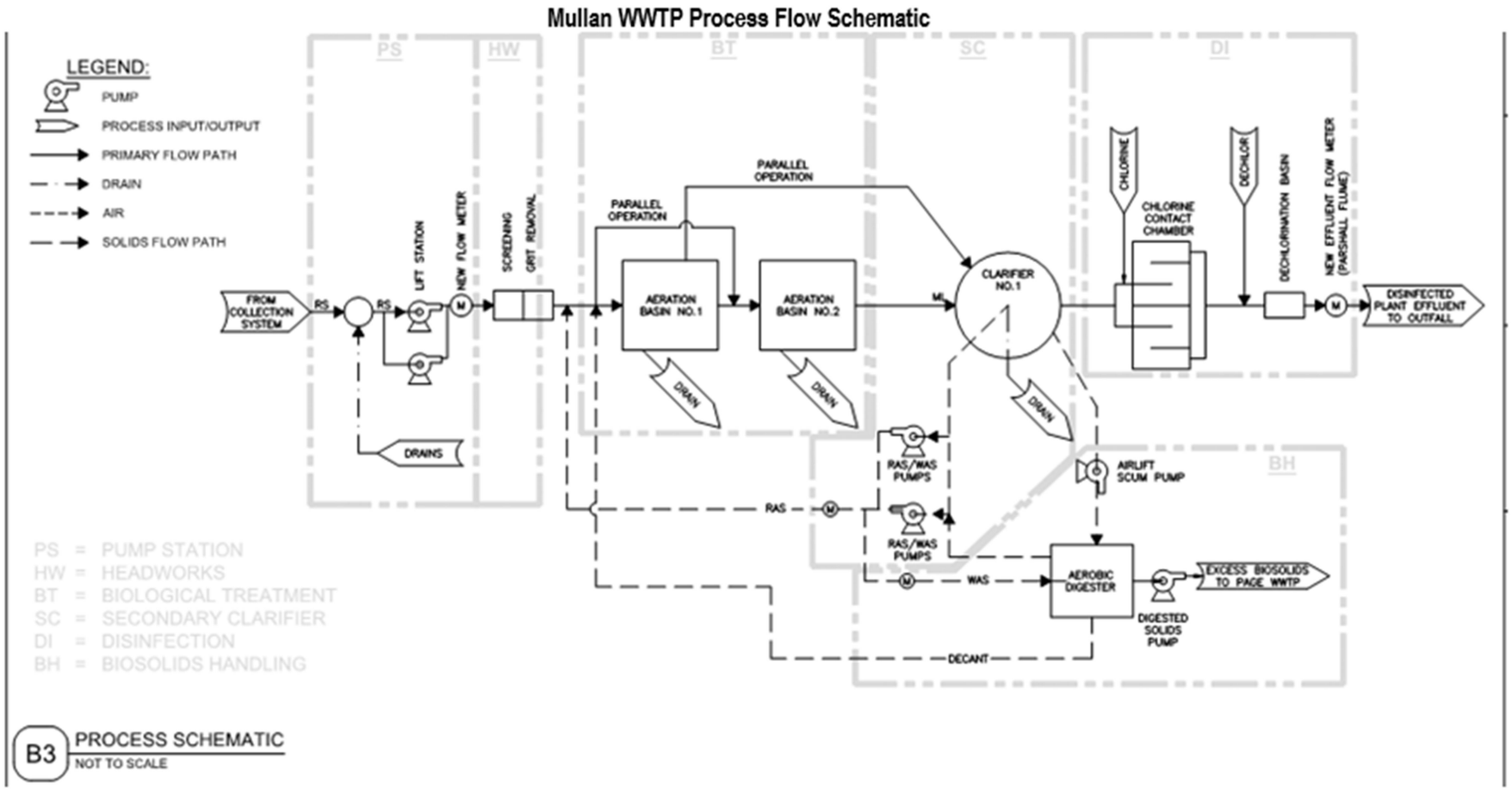
Mullan WWTP Process Flow Schematic
LEGEND:
PUMP
PROCESS INPUT/OUTPUT
PRIMARY FLOW PATH
DRAIN
AIR
SOLIDS FLOW PATH
PS
HW
BT
SC
DI
BH
FROM COLLECTION SYSTEM
RS
RS
LIFT STATION
NEW FLOW METER
SCREENING
GRIT REMOVAL
PARALLEL OPERATION
PARALLEL OPERATION
AERATION BASIN NO.1
AERATION BASIN NO.2
M
CLARIFIER NO.1
CHLORINE
CHLORINE CONTACT CHAMBER
DECHLOR
DECHLORINATION BASIN
NEW EFFLUENT FLOW METER (PARSHALL FLUME)
DISINFECTED PLANT EFFLUENT TO OUTFALL
DRAIN
DRAIN
DRAIN
DRAINS
RAS/WAS PUMPS
AIRLIFT SCUM PUMP
RAS
RAS/WAS PUMPS
WAS
AEROBIC DIGESTER
EXCESS BIOSOLIDS TO PAGE WWTP
DIGESTED SOLIDS PUMP
DECANT
PS = PUMP STATION
HW = HEADWORKS
BT = BIOLOGICAL TREATMENT
SC = SECONDARY CLARIFIER
DI = DISINFECTION
BH = BIOSOLIDS HANDLING
B3
PROCESS SCHEMATIC
NOT TO SCALE

Appendix B. Technical Calculations

The results of the technical calculations are discussed above in sections 3.2 and 3.3 of the fact sheet.

A. Technology-Based Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as secondary treatment, which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated secondary treatment effluent limits, which are found in 40 CFR 133. These TBELs apply to all municipal wastewater treatment facilities and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH.

The concentration, load, and removal rate limits for BOD_5 and TSS are the technology-based effluent limits (TBELs) of 40 CFR 133.102. As explained in section 3.3.3, DEQ has determined that more stringent WQBELs are necessary for pH.

All other parameter limits for *E. coli*, cadmium, lead, and zinc are based on WQBELs in order to ensure compliance with water quality standards. RPA was conducted for TRC and ammonia and no reasonable potential existed to prompt limit development. Equations used in this determination are given below.

B. Reasonable Potential and Water Quality-Based Effluent Limit Calculations

DEQ uses the process in the *Effluent Limit Development Guidance* (DEQ 2017) to determine reasonable potential. After characterizing the effluent and receiving water, DEQ compares the projected receiving water concentration after the effluent is discharged to the water quality criteria for the pollutant of concern. If the projected concentration exceeds the criterion, there is reasonable potential and an effluent limit is developed.

If DEQ chooses to authorize a mixing zone, the water quality criteria must still be met at the edge of the mixing zone. If after the analysis of the mixing zone, water quality criteria are not being met, the facility will receive an effluent limit that identifies both the size of the mixing zone and the final effluent limit.

Mass-Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass-balance equation:

$$C_d = \frac{(C_e Q_e) + \lfloor C_u (Q_u \times \%MZ) \rfloor}{Q_e + (Q_u \times \%MZ)}$$

Equation 1. Simple mass-balance equation.

Where:

C_d = downstream receiving water concentration	Calculated value
Q_e = critical effluent flow	From discharge flow data (design flow for POTW)

Q_u = critical upstream flow (1Q10 acute criterion, 7Q10 chronic, or harmonic mean)	From water quality standards
%MZ = percent of critical low flow provided by mixing zone	From mixing zone analysis
C_u = critical upstream pollutant concentration (90th to 95th percentile)	From receiving water data
C_e = critical effluent pollutant concentration	Calculated value using Equation 4.

A dilution factor (D) can be introduced to describe the allowable mixing. A dilution factor represents the ratio of the receiving water body low flow percentage (i.e., the low-flow design discharge conditions) to the effluent discharge volume and is expressed as:

$$Dilution\ Factor = D_f = \frac{(Q_S \times P + Q_e)}{Q_e} = \frac{(Q_s \times P)}{Q_e} + 1$$

Equation 2. Dilution factor calculation.

Where: D_f= Dilution factor

Qs = Receiving water low-flow condition (cfs)

P = Mixing zone percentage

Qe = Effluent discharge flow (cfs)

The above equations for C_d are the forms of the mass-balance equation, which were used to determine reasonable potential and calculate WLAs.

Critical Effluent Pollutant Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, DEQ's *Effluent Limit Development Guidance* (DEQ 2017) recommends using the critical effluent pollutant concentration (C_e) in the mass balance calculation (see Equation 1). To determine the C_e DEQ has adopted EPA's statistical approach that accounts for day-to-day variability in effluent quality by identifying the number of samples, calculating the coefficient of variation (CV) (Equation 7, below), and selecting a reasonable potential multiplying factor (RPMF) from the tables in the *Effluent Limit Development Guidance* (DEQ 2017).

$$CV = \frac{Standard\ Deviation}{Mean}$$

Equation 3. CV calculation.

$$C_e = MOEC\ x\ RPMF$$

Equation 4. C_e calculation.

If the C_e exceeds water quality criteria then a reasonable potential analysis is conducted.

Reasonable Potential Analysis

The discharge has reasonable potential to cause or contribute to an exceedance of WQC, referred to as a reasonable potential to exceed (RPTE), if the critical concentration of the pollutant at the end of pipe exceeds the most stringent WQC for that pollutant. This RPTE may result in end-of-

pipe limits or may be accommodated if the receiving water has sufficient low flows to provide a mixing zone and the POC does not have acute toxicity attributes. Other conditions may also be applicable that may restrict the use of a mixing zone for the POC.

RPA Example Calculations for Total Residual Chlorine

The calculations below are also shown in Table 25.

$$C_d = \frac{(C_e Q_e) + \lfloor C_u(Q_u \times \%MZ)\rfloor}{Q_e + (Q_u \times \%MZ)}$$

Where:

C_d = downstream receiving water concentration	= calculated
Q_e = critical effluent flow	= 0.85 cfs (0.55 mgd design flow)
$Q_{u\text{-}acute}$ = critical upstream flow (1Q10)	= 3.72 cfs
$Q_{u\text{-}chronic}$ = critical upstream flow (7Q10)	= 4.62 cfs
%MZ = percent of critical low flow	2% (acute) 16% (chronic)
C_u = critical upstream concentration	= 0 µg/L
C_e = critical effluent pollutant concentration	= $MOEC \times RPMF$ = 20 µg/L
MOEC = maximum observed effluent concentration	= 20 µg/L
RPMF = reasonable potential multiplying factor	=1.0 (see Table 25)

$$C_{d-acute} = \frac{\left(20\frac{\mu g}{L} \times 0.85 cfs\right) + \lfloor 0\mu g/L(3.72\ cfs \times 2\%)\rfloor}{0.85\ cfs + (3.72\ cfs \times 2\%)}$$

$$C_{d-acute} = \frac{(17) + \lfloor 0\rfloor}{0.9244}$$

$$C_{d-acute} = 18.4$$

Acute WQS for TRC is 19 µg/L. $C_{d\text{-}acute}$ < WQS therefore there is no reasonable potential to cause or contribute to water quality impairments.

$$C_{d-chronic} = \frac{\left(20\frac{\mu g}{L} \times 0.85 cfs\right) + \lfloor 0\mu g/L(4.62\ cfs \times 16\%)\rfloor}{0.85\ cfs + (4.62\ cfs \times 16\%)}$$

$$C_{d-chronic} = \frac{(17) + \lfloor 0\rfloor}{1.59}$$

$$C_{d-chronic} = 10.7$$

Chronic WQS for TRC is 11 µg/L. $C_{d\text{-}chronic}$ < WQS therefore there is no reasonable potential to cause or contribute to water quality impairments.

C. WQBEL Calculations

The following calculations demonstrate how the WQBELs in the permit were calculated. The permit includes WQBELs for pH, cadmium, lead, and zinc. The following discussion presents the general equations used to calculate the WQBELs. RPA was conducted for TRC and ammonia and no reasonable potential existed to prompt limit development. The following discussion presents the general equations used to calculate WQBELs, and uses lead as an example for how WQBEL limits were derived using these equations this permit cycle.

Calculate the Wasteload Allocations (WLAs)

WLAs are calculated using the same mass-balance equations used to calculate the concentration of the pollutant at the mixing zone boundary in the RPA. WLAs must be calculated for both acute and chronic criteria. To calculate the WLAs, C_d is set equal to the appropriate criterion and the equation is solved for C_e. The calculated C_e is the WLA. Equation 9 is rearranged to solve for the WLA:

$$C_e = WLA_{(a\ or\ c)} = \frac{WQC_{(a\ or\ c)}[Q_e + (Q_u \times \%MZ)] - [C_u \times (Q_u \times \%MZ)]}{Q_e}$$

Equation 5. Simple mass-balance equation for calculating WLA for flowing water.

Where:

$WQC_{(a\ or\ c)}$ = Pollutant water quality criterion (acute or chronic)	Calculated value
Q_e = Critical effluent flow	From discharge flow data (design flow for POTW)
Q_u = Critical upstream flow (1Q10 acute criterion or 7Q10 chronic)	From water quality standards
%MZ = Percent of critical low flow provided by mixing zone	From mixing zone analysis
C_u = Critical upstream pollutant concentration (90th to 95th percentile)	From receiving water data
$C_e = WLA_{(a\ or\ c)}$ = wasteload allocation (acute or chronic)	Calculated from Equation 4

Idaho's WQC for some metals are expressed as the dissolved fraction, but the rules regulating the IPDES program (IDAPA 58.01.25.303.03) require that effluent limits be expressed as total recoverable metal unless standards have been promulgated allowing limits specified in dissolved, valent, or total forms. A case-by-case basis has been established for limits specified in dissolved, valent, or total form, or all approved analytical methods for the metal inherently measure only its dissolved form. Therefore, the permit writer should calculate a WLA in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator. As discussed in *Guidance Document on Dynamic Modeling and Translators* (EPA 1993), the criteria translator (CT) is equal to the conversion factor when site-specific translators are not available. Conversion factors for metals criteria are listed in DEQ's Water Quality Standards (WQS) at IDAPA 58.01.02.210.02. The WQS also lists several guidance documents at IDAPA 58.01.02.210.04 that are recommended for the development of site specific translators.

The next step is to compute the acute and chronic long-term average ($LTA_{(a\ or\ c)}$) concentrations, which will be derived from the acute and chronic WLAs. This is done using the following equations from the *Effluent Limit Development Guidance* (DEQ 2017):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z_{99}\sigma)}$$

Equation 6. Acute LTA for toxics.

Where:

LTA_a = Acute long-term average	Calculated value
WLA_a = Acute wasteload allocation	Calculated value. See Equation 5.
e = Base of natural log	Approximately 2.718
σ = Square root of σ^2	
$\sigma^2 = Ln(CV^2+1)$	Ln is the natural log
CV = Coefficient of variation	Calculated using field data. If 10 or less samples available, use default value of 0.6. See Equation 3
Z_{99} = z score of the 99th percentile of the normal distribution	2.326

$$LTA_c = WLA_c \times e^{(0.5\sigma_n^2 - z_{99}\sigma_n)}$$ **Equation 7. Chronic LTA average for toxics.**

Where:

LTA_c = Chronic long-term average	Calculated value
WLA_c = Chronic wasteload allocation	Calculated value. See Equation 5.
e = Base of natural log	Approximately 2.718
σ_n = Square root of σ_n^2	
$\sigma_n^2 = Ln[(CV^2)/n + 1)]$	Ln is the natural log
CV = Coefficient of variation	Calculated using field data. If 10 or less, samples available use default value of 0.6. See Equation 3.
Z_{99} = z score of the 99th percentile of the normal distribution	2.326
n = Averaging period for the chronic water quality criterion (typically 4 days)	Varies

The acute and chronic LTAs are compared, and the more stringent of the two is used to calculate the maximum daily and average monthly limits.

Derive the Maximum Daily and Average Monthly Effluent Limits

Using the *Effluent Limit Development Guidance* (DEQ 2017) equations, the maximum daily limit (MDL) and average monthly limit (AML) are calculated as follows:

$$Maximum\ Daily\ Limit = LTA_m \times e^{(z_{99}\sigma - 0.5\sigma^2)}$$ **Equation 8. Maximum daily limit for toxics.**

Where:

LTA_m = Minimum long-term average value	Lesser value calculated from Equation 6 and Equation 7
e = Base of natural log	Approximately 2.718
σ = Square root of σ^2	
$\sigma^2 = Ln(CV^2+1)$	Ln is the natural log of base e
Z_{99} = z score of the 99th percentile of the normal distribution	2.326
CV = Coefficient of variation	See Equation 3.

$$AML = LTA_m \times e^{(z_{95}\sigma_n - 0.5\sigma_n^2)}$$ **Equation 9. Average monthly limit for toxics.**

Where:

LTA_m = Minimum long-term average	Lesser value calculated from Equation 6 and Equation 7
AML = Average monthly limit	Calculated value
e = Base of natural log	Approximately 2.718
σ_n = Square root of σ_n^2	
$\sigma_n^2 = Ln[(CV^2)/n + 1]$	Ln is the natural log of base e
Z_{95} = z score of the 95th percentile of the normal distribution	1.645
n = Number of sample specified in the permit to be analyzed each month	Typically n = 1, 2, 4, 10, or 30.
CV = Coefficient of variation	See Equation 3

RPA Example Calculations for Total Lead

The calculations below are also shown in Table 25.

$$C_d = \frac{(C_e Q_e) + \lfloor C_u(Q_u \times \%MZ)\rfloor}{Q_e + (Q_u \times \%MZ)}$$

Where:

C_d = downstream receiving water concentration (total lead concentration)	= calculated
Q_e = critical effluent flow	= 0.85 cfs (0.55 mgd design flow)
$Q_{u\text{-}acute}$ = critical upstream flow (1Q10)	= 12.4 cfs
$Q_{u\text{-}chronic}$ = critical upstream flow (7Q10)	= 14.3 cfs
%MZ = percent of critical low flow	0% (no mixing granted due to receiving water impairment)
C_u = critical upstream concentration	= 13.5 µg/L (from previous RPA)
C_e = critical effluent pollutant concentration	= MOEC × RPMF = 66.85 µg/L
MOEC = maximum observed effluent concentration or 95th percentile	= 30.3µg/L

RPMF = reasonable potential multiplying factor =2.206 (see Table 25)

$$C_{d-acute} = \frac{\left(66.85\frac{\mu g}{L} \times 0.85cfs\right) + \lfloor 13.5\mu g/L(12.4\ cfs \times 0\%)\rfloor}{0.85cfs + (12.4cfs \times 0\%)}$$

$$C_{d-acute} = \frac{(56.8) + \lfloor 0\rfloor}{0.85}$$

$$C_{d-acute} = 66.85\text{µg/L (total lead concentration)}$$

$$C_{d-acute} = 66.85\text{µg/L} * 1.0\ (metals\ translator^{vi})$$

$$C_{d-acute} = 66.85\text{µg/L (dissolved lead concentration)}$$

Acute WQS for lead using the site specific criteria hardness dependent equation is 144 µg/L (dissolved)[vii]. $C_{d\text{-}acute}$ < WQS therefore there is no reasonable potential to cause or contribute to water quality impairments for the acute criterion.

$$C_{d-chronic} = \frac{\left(66.85\frac{\mu g}{L} \times 0.85cfs\right) + \lfloor 13.5\mu g/L(14.3\ cfs \times 0\%)\rfloor}{0.85\ cfs + (14.3cfs \times 0\%)}$$

$$C_{d-chronic} = \frac{(56.8) + \lfloor 0\rfloor}{0.85}$$

$$C_{d-chronic} = 66.85\text{µg/L (total lead concentration)}$$

$$C_{d-chronic} = 66.85\text{µg/L} * 1.0\ (metals\ translator^{viii})$$

$$C_{d-chronic} = 66.85\text{µg/L (dissolved lead concentration)}$$

Chronic WQS for lead using the site specific criteria hardness dependent equation is 15.6 µg/L (dissolved)[ix]. $C_{d\text{-}chronic}$ > WQS therefore there is reasonable potential to cause or contribute to water quality impairments. Limits must be developed.

Example Limit Calculations with RPTE –Total Lead

[vi] Conservative assumption from site specific criteria equation.
[vii] The hardness at the critical flow of 12.4 cfs in the receiving water is 56 mg/L $CaCO_3$.
[viii] Conservative assumption from site specific criteria equation.
[ix] The hardness at the critical flow of 14.3 cfs in the receiving water is 53 mg/L $CaCO_3$

In first step in calculating effluent limits, the wasteload allocation (WLA) of both acute and chronic are calculated.

$$WLA_{(a\ or\ c)} = \frac{WQC_{(a\ or\ c)}[Q_e+(Q_u\times\%MZ)]-[C_u\times(Q_u\times\%MZ)]}{Q_e}$$

Where:

C_d = downstream receiving water concentration	= calculated
Q_e = critical effluent flow	= 0.85 cfs (0.55 mgd design flow)
$Q_{u\text{-}acute}$ = critical upstream flow (1Q10)	= 12.4 cfs
Qu-chronic = critical upstream flow (30Q5)	= 14.3 cfs
%MZ = percent of critical low flow	Acute 0%, Chronic 0%
Cu = critical upstream concentration	= 13.5 µg/L
Ce = critical effluent pollutant concentration	= MOEC × RPMF = 66.85 µg/L
MOEC = maximum observed effluent concentration	= 30.3 µg/L
RPMF = reasonable potential multiplying factor	=2.206 (see Table 25)
$C_{d\ (a)}$	=66.85 µg/L
$C_{d\ (c)}$	=66.85 µg/L
$WQC_{(a)}$	=144 µg/L
$WQC_{(c)}$	=15.6 µg/L

$$WLA_{(a)} = \frac{WQC_{(a)}[Q_e + (Q_u \times \%MZ)] - [C_u \times (Q_u \times \%MZ)]}{Q_e}$$

$$\mathrm{WLA_{(a)}} = \frac{144\mu g/L[0.85cfs + (12.4cfs \times 0\%)] - [13.5\mu g/L \times (12.4cfs \times 0\%)]}{0.85cfs}$$

$$\mathrm{WLA_{(a)}} = \frac{122.4 - [0]}{0.85}$$

$$WLA_{(a)} = 144\ \mu g/L$$

$$WLA_{(c)} = \frac{WQC_{(c)}[Q_e + (Q_u \times \%MZ)] - [C_u \times (Q_u \times \%MZ)]}{Q_e}$$

$$WLA_{(c)} = \frac{15.6\ \mu g/L[0.85cfs + (14.3cfs \times 0\%)] - [13.5\mu g/L \times (14.3cfs \times 0\%)]}{0.85cfs}$$

$$\mathrm{WLA_{(c)}} = \frac{13.26 - [0]}{0.85}$$

$$\mathrm{WLA_{(c)}} = 15.6\ \mu g/L$$

A long term average (LTA) is calculated using the values in the step above.

$$\mathrm{LTA_a} = \mathrm{WLA_a} \times e^{(0.5\sigma^2 - z_{99}\sigma)}$$

Where:

LTAa = Acute long-term average	Calculated value
WLAa = Acute wasteload allocation	=144 ug/L
e = Base of natural log	Approximately 2.718
σ = Square root of σ2	=1.004
$\sigma^2 = \mathrm{Ln}(CV^2+1)$	=1.009
CV = Coefficient of variation	1.32 (from effluent data)
Z_{99} = z score of the 99th percentile of the normal distribution	2.326

$$LTA_a = 144\ \mu g/L \times 2.718^{(0.5*1.009-2.326*1.004)}$$

$$\mathrm{LTA_a} = 23\ \mu g/L$$

$$\mathrm{LTA_c} = \mathrm{WLA_c} \times e^{(0.5\sigma_n^2 - z_{99}\sigma_n)}$$

Where:

LTA_c = Chronic long-term average	Calculated value
WLA_c = Chronic wasteload allocation	=15.6 µg/L
e = Base of natural log	Approximately 2.718
σ_n = Square root of σn2	=0.601

$\sigma_n^2 = \text{Ln}[(CV^2)/n + 1)]$ =0.362
CV = Coefficient of variation =1.32 (from effluent data)
Z_{99} = z score of the 99th percentile of the normal distribution 2.326
n = Averaging period for the chronic water quality criterion (typically 4 days) 4

$$LTA_c = 15.6\ \mu\text{g/L} \times 2.718^{(0.5*0.362-2.326*0.601)}$$
$$LTA_c = 4.6\ \mu\text{g/L}$$

The chronic long term average is more limiting and will be used for effluent limit calculations.

$$\text{Maximum Daily Limit} = (\text{LTA}_m \times e^{(z_{99}\sigma - 0.5\sigma^2)}) \frac{1}{Metals\ translator}$$

Where:

LTA_m = Minimum long-term average value =4.6 µg/L
σ = Square root of σ^2 =1.004
$\sigma^2 = \text{Ln}(CV^2+1)$ =1.009
Z_{99} = z score of the 99th percentile of the normal distribution 2.326
Metals translator = 1.0 (site specific chronic translator)

$$Maximum\ Daily\ Limit = 4.1\ \mu\text{g/L} \times e^{(2.326*1.004-0.5*1.009)} * (1/\ 1.0)$$
$$\text{Maximum Daily Limit} = 29\ \mu\text{g/L (total lead)}$$
Maximum Daily Limit = 0.029 mg/L × 0.85 mgd × 8.34 = 0.13 lb/day

$$\text{AML} = (\text{LTA}_m \times e^{(z_{95}\sigma_n - 0.5\sigma_n^2)}) \frac{1}{\text{Metals translator}}$$

Where:

LTA_m = Minimum long-term average =4.6 µg/L
AML = Average monthly limit Calculated value
e = Base of natural log Approximately 2.718
σ_n = Square root of σ_n^2 =0.601
$\sigma_n^2 = \text{Ln}[(CV^2)/n + 1]$ =0.362
Z_{95} = z score of the 95th percentile of the normal distribution 1.645
n = Number of sample specified in the permit to be analyzed each month = 4
Metals translator = 1.0 (site specific chronic translator)

$$AML = 4.6\frac{\text{ug}}{\text{L}} \times e^{(1.645*0.601-0.5*0.362)} * (\frac{1}{1.0})$$
$$\text{AML} = 10\ \mu\text{g/L}$$
Average Monthly Limit = 0.010 mg/L × 0.55 mgd × 8.34 = 0.047 lb/day

Table 25, below, details the calculations for WQBELs.

Table 25. RPA for the Mullan WWTP.

Idaho - Numeric Criteria for Toxic Substances (IDAPA 50.01.02.210)

Sources IDAPA 58.01.02
EPA National Recommended Water Quality Criteria

	Annual	Seasonal1	Seasonal2
Criteria below calculated using:			
Acute Hardness, mg/L:	56.0	--	--
Chronic Hardness, mg/L:	53.0	--	--

Pollutants of Concern (POC) (Note: Table must be sorted A to Z for lookup to function correctly.) Filters may be used to select Pollutants of Concern.	Select Pollutant of Concern or enter µg/L	Idaho WQS (Number)	CAS No.	NPDES Application Ref. No.	Criteria variable dependent	Acute Hardness, mg/L	Chronic Hardness, mg/L	WER Acute = AT (sample)/ AT(lab)	WER Chronic = CT (sample)/ CT(lab)	Priority Pollutant?	Carcinogen?	Aquatic Life Criteria, µg/L Acute	Aquatic Life Criteria, µg/L Chronic	Human Health Criteria Water and Organisms, µg/L	Human Health Criteria Organisms only, µg/L	Metals Translator Acute	Metals Translator Chronic
Ammonia Nitrogen, Total (mg N/L)		0.1 for FW criteria			pH, temperature (use worksheet)					N	N						
CADMIUM		4	7440439	4M	Hardness	56.0	53.0	1	1	Y	N	1.15	0.64	Narrative	Narrative	0.973	0.936
CHLORINE (Total Residual)		121	7782505							N	N	19	11				
LEAD - SEE Toxic BiOp		7	7439921	7M	Hardness	56.0	53.0	1	1	Y	N	144	15.6	Narrative	Narrative	1.000	1.000
pH	x									N	N		6.5 - 8.5				
ZINC - SEE Toxic BiOp		13	7440666	13M	Hardness	56.0	53.0	1	1	Y	N	133	128	7400	26000	1.000	1.000

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	Mullan
Facility Flow (mgd)	0.55
Facility Flow (cfs)	0.85

Critical River Flows	(IDAPA 58.01.02 03. b)	Annual Crit. Flows	Units
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	1Q10	12.4	cfs
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	7Q10 or 4B3	14.3	cfs
Ammonia	30B3/30Q10 (seasonal)	16.2	cfs
Human Health - Non-Carcinogen	30Q5	18.0	cfs
Human Health - carcinogen	Harmonic Mean Flow	38.3	cfs

Receiving Water Data	Notes:	Annual	
Hardness, as mg/L $CaCO_3$	Hardness, as mg/L $CaCO_3$ 5th prctile at critical flow		See WQ Criteria Table
Temperature, °C	Temperature, °C 90th - 95th percentile	14.54	95th
pH, S.U.	pH, S.U. 90th - 95th percentile	7.92	95th

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages present	CHLORINE (Total Residual)	CADMIUM	LEAD - SEE Toxic BiOp	ZINC - SEE Toxic BiOp
Effluent Data	Number of Samples in Data Set (n)		302	1519	72	72	72
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		1.902	1.94	1.7	1.32	1.03
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		6,700	20	8.6	30.3	1804
	Calculated 50th prctile Effluent Conc. (when n>10), Human Health Only						288
Receiving Water Statistics	90th Percentile Conc., µg/L - (C_u)		69	0	0.3	13.5	52
	Geometric Mean, µg/L, Human Health Criteria Only						
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	6,521	19.	1.151	143.7	133
	Aquatic Life Criteria, µg/L	Chronic	2,719	11.	.645	15.6	128.2
	Human Health Water and Organism, µg/L		--	--	Narrative	Narrative	7,400.
	Human Health, Organism Only, µg/L		--	--	Narrative	Narrative	26,000.
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute		--	.973	1.	1.
		Chronic		--	.936	1.	1.
	Carcinogen (Y/N), Human Health Criteria Only		--	N	N	N	N
Percent River Flow	Aquatic Life - Acute	1Q10	2%	1%	0%	0%	0%
	Aquatic Life - Chronic	7Q10 or 4B3		5%	0%	0%	0%
		30B3 or 30Q10		--	--	--	0%
	Human Health - Non-Carcinogen and Chronic Ammonia	30Q5	10%	--	--	--	0%
	Human Health - Carcinogen	Harmonic Mean	%	--	--	--	0%
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life - Acute	1Q10	1.29	1.15	1.00	1.00	1.00
	Aquatic Life - Chronic	7Q10 or 4B3		1.84	1.00	1.00	1.00
		30B3 or 30Q10		--	--	--	1.00
	Human Health - Non-Carcinogen and Chronic Ammonia	30Q5	3.12	--	--	--	1.00
	Human Health - Carcinogen	Harmonic Mean		--	--	--	1.00

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		1.237	1.249	1.166	1.004	0.850
P_n	=(1-confidence level)$^{1/n}$, where confidence level =	99%	0.985	0.997	0.938	0.938	0.938
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)\sigma-0.5\sigma^2]$, where	99%	1.22	1.00	2.505	2.206	1.954
Statistically projected critical discharge concentration (C_e)			8164	20.00	21.54	66.85	3525
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	6337	17.46	21	66.8	3525
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	2667	10.87	20	66.8	3525
Reasonable Potential to exceed Aquatic Life Criteria			No	No	Yes	Yes	Yes

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)					1	1	1
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			--	--	4	4	4
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		1.902	1.940	1.70	1.32	1.03
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		1.902	1.940	1.70	1.32	1.03
Acute WLA, ug/L	C_e = (Acute Criteria x MZ_a) - C_u x (MZ_a-1)	Acute	--	--	1.2	143.7	133
Chronic WLA, ug/L	C_e = (Chronic Criteria x MZ_c) - $C_{u\,x}$ (MZ_c-1)	Chronic	--	20.2	0.6	15.6	128
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2-z\sigma)$, Acute	99%	--	--	0.2	23.0	26
(99th % occurrence prob.)	WLAa x $\exp(0.5\sigma^2-z\sigma)$; ammonia n=30, Chronic	99%	--	4.2	0.2	4.6	47
Limiting LTA, ug/L	used as basis for limits calculation		--	4.2	0.2	4.6	26
Applicable Metals Criteria Translator (metals limits as total recoverable)				--	0.973	--	--
Average Monthly Limit (AML), ug/L , where % occurrence prob =		95%	--	--	**0.40**	**10**	**52**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		99%	--	--	**1.2**	**29**	**133**
Average Monthly Limit (AML), mg/L			--	--	**0.00040**	**0.010**	**0.052**
Maximum Daily Limit (MDL), mg/L			--	--	**0.0012**	**0.029**	**0.13**
Average Monthly Limit (AML), lb/day			--	--	**0.0018**	**0.047**	**0.24**
Maximum Daily Limit (MDL), lb/day			--	--	**0.0054**	**0.13**	**0.61**

Human Health Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$			1.249	1.166	1.004	0.850
P_n	=(1-confidence level)$^{1/n}$ where confidence level =	95%		0.998	0.959	0.959	0.959
Multiplier	$=\exp(2.326\sigma-0.5\sigma^2)/\exp[\text{invnorm}(P_N)\sigma-0.5\sigma^2]$, prob. =	50%		0.027	0.131	0.174	0.227
Dilution Factor (for Human Health Criteria)				--	--	--	1.0
Max Conc. at edge of Chronic Zone, ug/L (C_d)				--	--	--	288
Reasonable Potential to exceed HH Water & Organism				NO	NO	NO	NO
Reasonable Potential to exceed HH Organism Only				NO	NO	NO	NO

Table 26. TSS TMDL WLA for the Mullan WWTP.

Annual/Seasonal Limit Calculations where the TMDL WLA is Assumed the LTA

				12.3 ton/yr									
ENTER TMDL WLA:	67.4	lb/day											
Design Flow:	0.55	cfs											

Multiplier to Calculate Permit Limits from LTA Reference: TSD Page 103

Number of Samples per Month (n)				4								
Number of Samples per Week Set (n/4)				1								
(i.e. 4 if sampling weekly for a month)												
Coefficient of Variation (CV) = Std. Dev./Mean				0.73								
weekly σ	σ = std deviation			0.654								
	$\sigma^2=\ln(CV^2/(n/4)+1)$			0.125								
monthly σ	σ n= std deviation			0.354								
	$\sigma n^2=\ln(CV^2/n+1)$			0.125	**Calculation:**	**LTA, Limiting**	**x**	**Multiplier**	=	**Limit**	
Average Monthly Limit (AML),	$\exp(z\sigma_n-0.5z\sigma_n^2)$; where % probability basis =	95%	Z= 1.64	1.68	AML = LTA, limiting x Multiplier	67.4	x	1.68	=	113	lb/day
Maximum Daily Limit (MDL),	$\exp(z\sigma-0.5z\sigma^2)$; where % probability basis=	99%	Z= 2.33	3.69	MDL = LTA, limiting x Multiplier	67.4	x	3.69	=	249	lb/day
Average Weekly Limit (AWL),	$\exp(z\sigma_{n/4}-0.5z\sigma_{n/4}^2)$; where % probability basis =	99%	Z= 2.33	3.69	AWL = AML x Multiplier	113.3	x	2.20	=	249	lb/day
Ratio AWL/AML				2.20	AAL/AAS=					67.4	lb/day

D. Mixing Zone Analysis

The dilution factors when using 25% of the critical low flows are 4.6 (1Q10) and 5.2 (7Q10) (see Equation 2). Based on the Idaho Mixing Zone Implementation Guidance, the permittee requires a Level 2 Analysis for mixing zones with dilution factors below 20. DEQ analyzed the mixing zones using the known flow, water quality and effluent quality, and estimated channel geometry in CORMIX. Design discharge to the South Fork Coeur d'Alene was modeled for the 1Q10 flow (12.4 cfs) and 7Q10 flow (14.2 cfs). See section 2.2.2 for critical low flow development. The stream width and depth (at critical low flows were estimated based on aerial photos. See Table 29, Table 30, Table 31, and Table 32 for all CORMIX inputs. Mixing zones for TRC and total ammonia are 25% or less of the stream width at critical low flows (see Figure 5, Figure 6, Figure 7, and Figure 8).

Table 27. Mullan WWTF Level 2 Total Residual Chlorine Acute Mixing Zone Analysis Inputs

Model Input	Value	Unit	Source
Discharge Concentration Excess	0.020	mg/L	RPA Workbook Maximum Observed Effluent Concentration (MOEC) Table 27
Effluent Flow	0.85	cfs	Facility Design Flow
Maximum Temperature for Effluent Density	18.8	°C	Table 4
Average Stream Depth	0.5	m	Estimated from Google Earth
Stream Depth at Discharge	0.5	m	Estimated from Google Earth
Wind Speed	0	m/sec	Assumed
Critical Stream Flow (Acute)	12.4	cfs	See Section 2.2.2
Manning's n	0.03	--	Estimated
Stream Width	2.5	m	Estimated from Google Earth
25% of stream width at 1Q10	0.63	m	Calculated based on Stream Width estimate
Receiving Water Temperature	14.54	°C	Table 27
Outlet channel width	1	m	Estimated
Outlet channel depth	0.1	m	Estimated
Acute Criteria	0.019	mg/L	WQS
Chronic Criteria	0.011	mg/L	WQS
Mixing Zone % of Channel Area	1	%	Table 11, Table 27

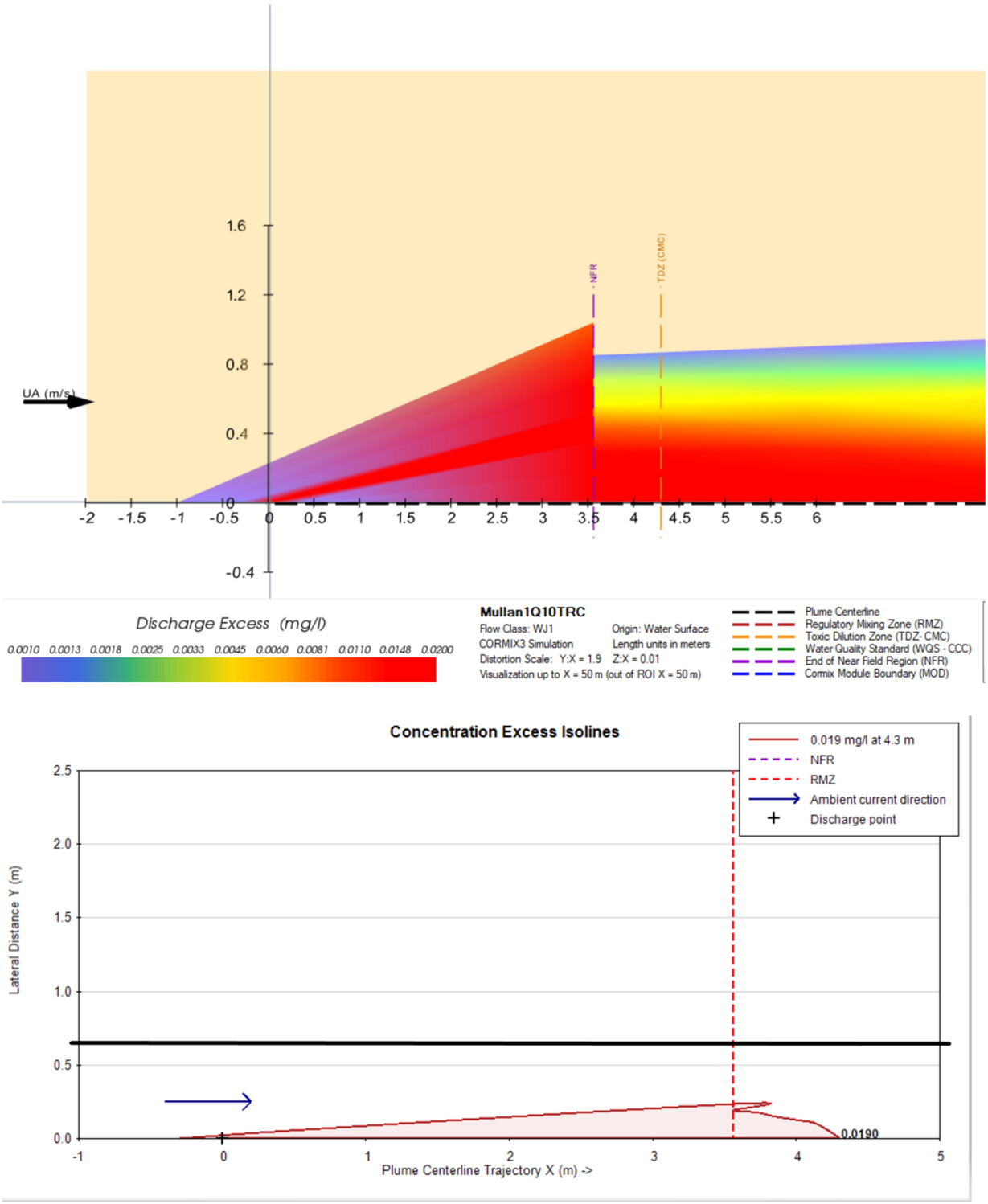

Figure 5. CORMIX modeled mixing of acute TRC at critical low flows. Above: A CORVue model showing TRC mixing and all concentrations in plan view. Below: An isoconcentration model in plan view of the TRC acute criterion mixing zone. The thick black line is an estimation of 25% of the width of the stream.

Table 28. Mullan WWTF Level 2 Total Residual Chlorine Chronic Mixing Zone Analysis Inputs

Model Input	Value	Unit	Source
Discharge Concentration Excess	0.020	mg/L	RPA Workbook Maximum Observed Effluent Concentration (MOEC) Table 27
Effluent Flow	0.85	cfs	Facility Design Flow
Maximum Temperature for Effluent Density	18.8	°C	Table 4
Average Stream Depth	0.5	m	Estimated from Google Earth
Stream Depth at Discharge	0.5	m	Estimated from Google Earth
Wind Speed	0	m/sec	Assumed
Critical Stream Flow (Chronic)	14.3	cfs	See Section 2.2.2
Manning's n	0.03	--	Estimated
Stream Width	2.5	m	Estimated from Google Earth
25% of stream width at 1Q10	0.63	m	Calculated based on Stream Width estimate
Receiving Water Temperature	14.54	°C	Table 27
Outlet channel width	1	m	Estimated
Outlet channel depth	0.1	m	Estimated
Acute Criteria	0.019	mg/L	WQS
Chronic Criteria	0.011	mg/L	WQS
Mixing Zone % of Channel Area	5	%	Table 11, Table 27

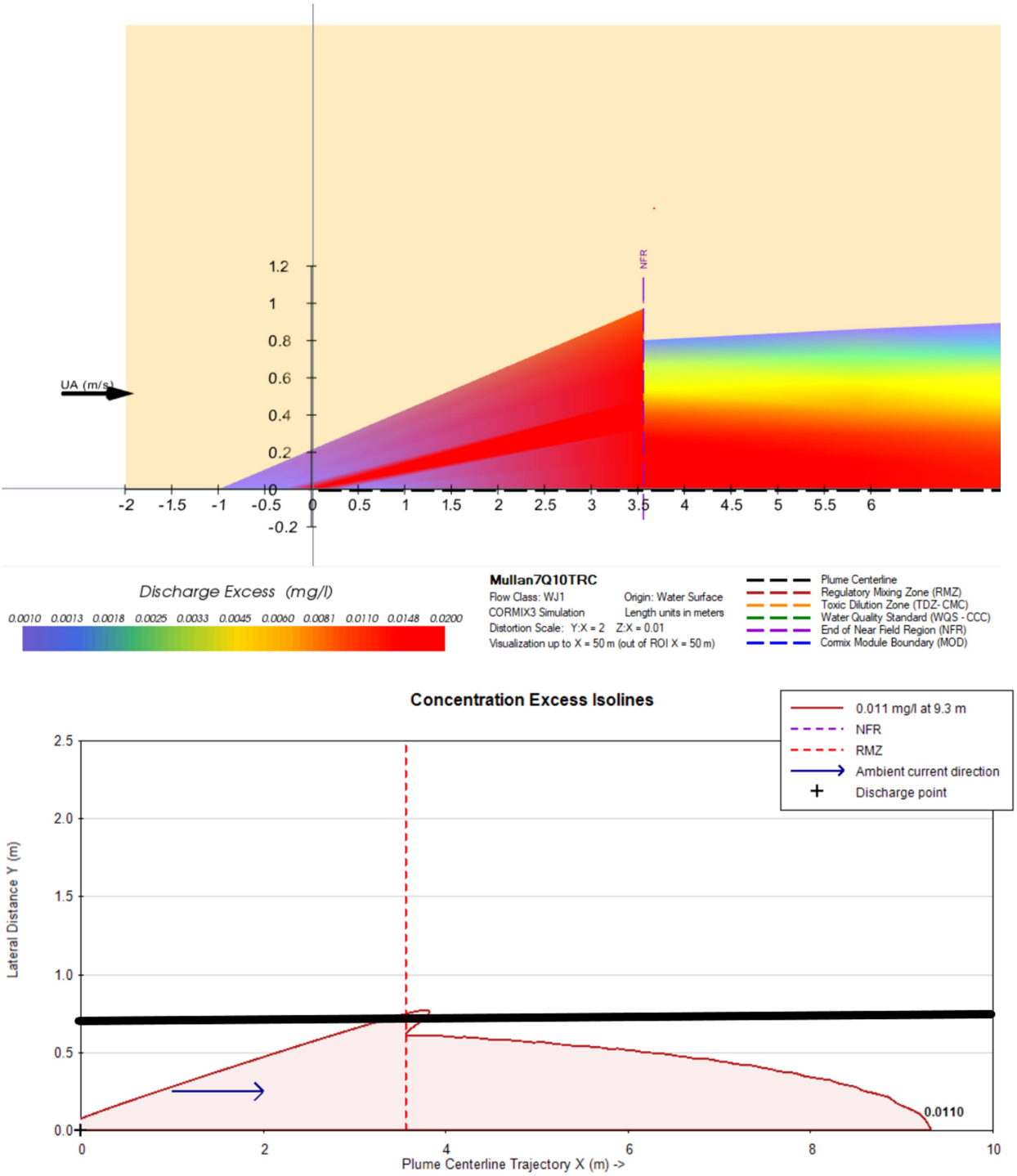

Figure 6. CORMIX modeled mixing of chronic TRC at critical low flows. Above: A CORVue model showing TRC mixing and all concentrations in plan view. Below: An isoconcentration model in plan view of the TRC chronic criterion mixing zone. The thick black line is an estimation of 25% of the width of the stream.

Table 29. Mullan WWTF Level 2 Total Ammonia Acute Mixing Zone Analysis Inputs

Model Input	Value	Unit	Source
Discharge Concentration Excess	6.7	mg/L	RPA Workbook 95th Percentile of Effluent Concentration Table 27
Effluent Flow	0.85	cfs	Facility Design Flow
Maximum Temperature for Effluent Density	18.8	°C	Table 4
Average Stream Depth	0.5	m	Estimated from Google Earth
Stream Depth at Discharge	0.5	m	Estimated from Google Earth
Wind Speed	0	m/sec	Assumed
Critical Stream Flow (Acute)	12.4	cfs	See Section 2.2.2
Manning's n	0.03	--	Estimated
Stream Width	2.5	m	Estimated from Google Earth
25% of stream width at 1Q10	0.63	m	Calculated based on Stream Width estimate
Receiving Water Temperature	14.54	°C	Table 27
Outlet channel width	1	m	Estimated
Outlet channel depth	0.1	m	Estimated
Acute Criteria	6.5	mg/L	WQS
Chronic Criteria	2.7	mg/L	WQS
Mixing Zone % of Channel Area	2	%	Table 11, Table 27

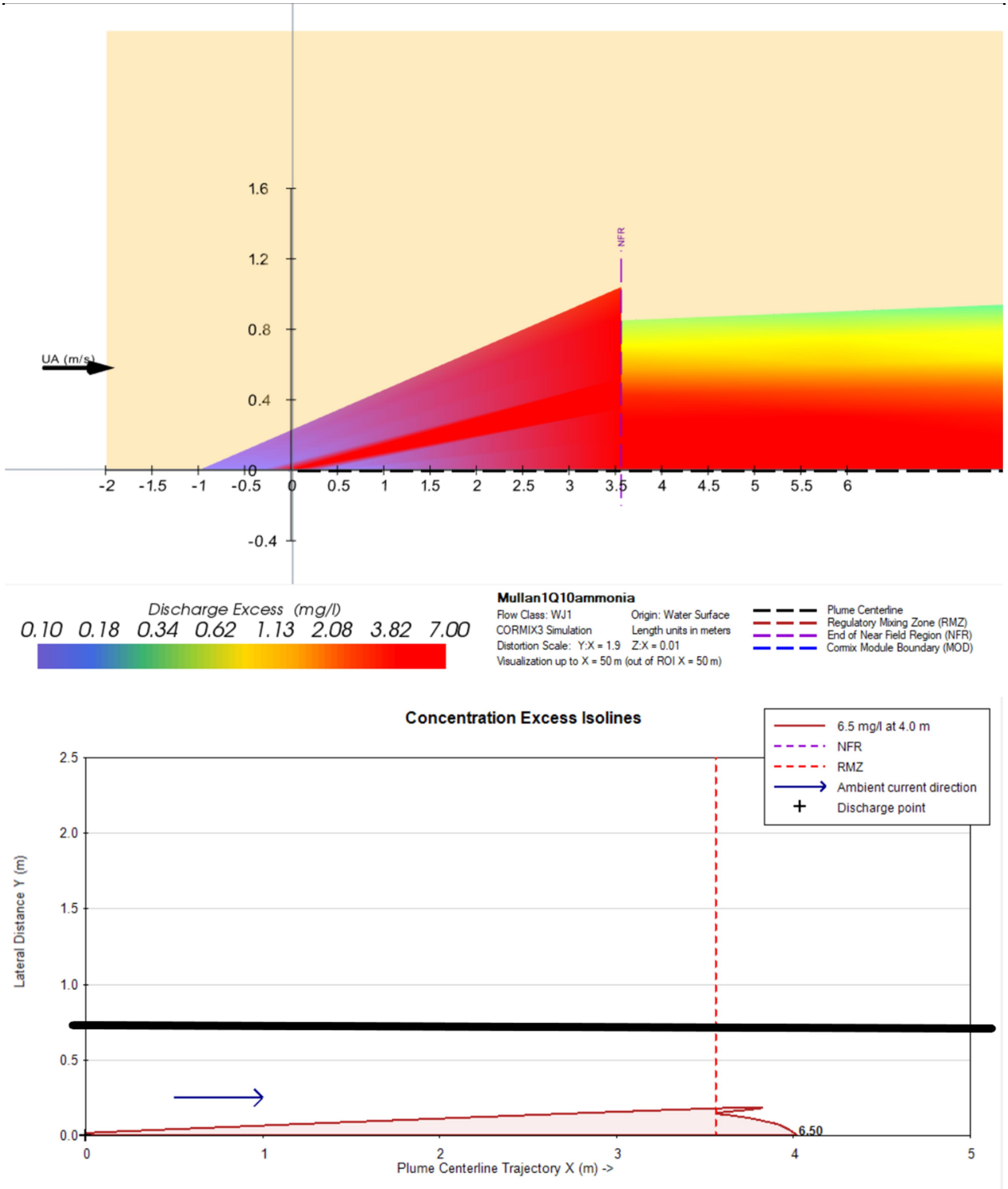

Figure 7. CORMIX modeled mixing of acute total ammonia at critical low flows. Above: A CORVue model showing ammonia mixing and all concentrations in plan view. Below: An isoconcentration model in plan view of the ammonia acute criterion mixing zone. The thick black line is an estimation of 25% of the width of the stream.

Table 30. Mullan WWTF Level 2 Total Ammonia Chronic Mixing Zone Analysis Inputs

Model Input	Value	Unit	Source
Discharge Concentration Excess	6.7	mg/L	RPA Workbook 95th Percentile of Effluent Concentration Table 27
Effluent Flow	0.85	cfs	Facility Design Flow
Maximum Temperature for Effluent Density	18.8	°C	Table 4
Average Stream Depth	0.5	m	Estimated from Google Earth
Stream Depth at Discharge	0.5	m	Estimated from Google Earth
Wind Speed	0	m/sec	Assumed
Critical Stream Flow (30Q5)	18.0	cfs	See Section 2.2.2
Manning's n	0.03	--	Estimated
Stream Width	3	m	Estimated from Google Earth
25% of stream width at 1Q10	0.8	m	Calculated based on Stream Width estimate
Receiving Water Temperature	14.54	°C	Table 27
Outlet channel width	1	m	Estimated
Outlet channel depth	0.1	m	Estimated
Acute Criteria	6.5	mg/L	WQS
Chronic Criteria	2.7	mg/L	WQS
Mixing Zone % of Channel Area	10	%	Table 11, Table 27

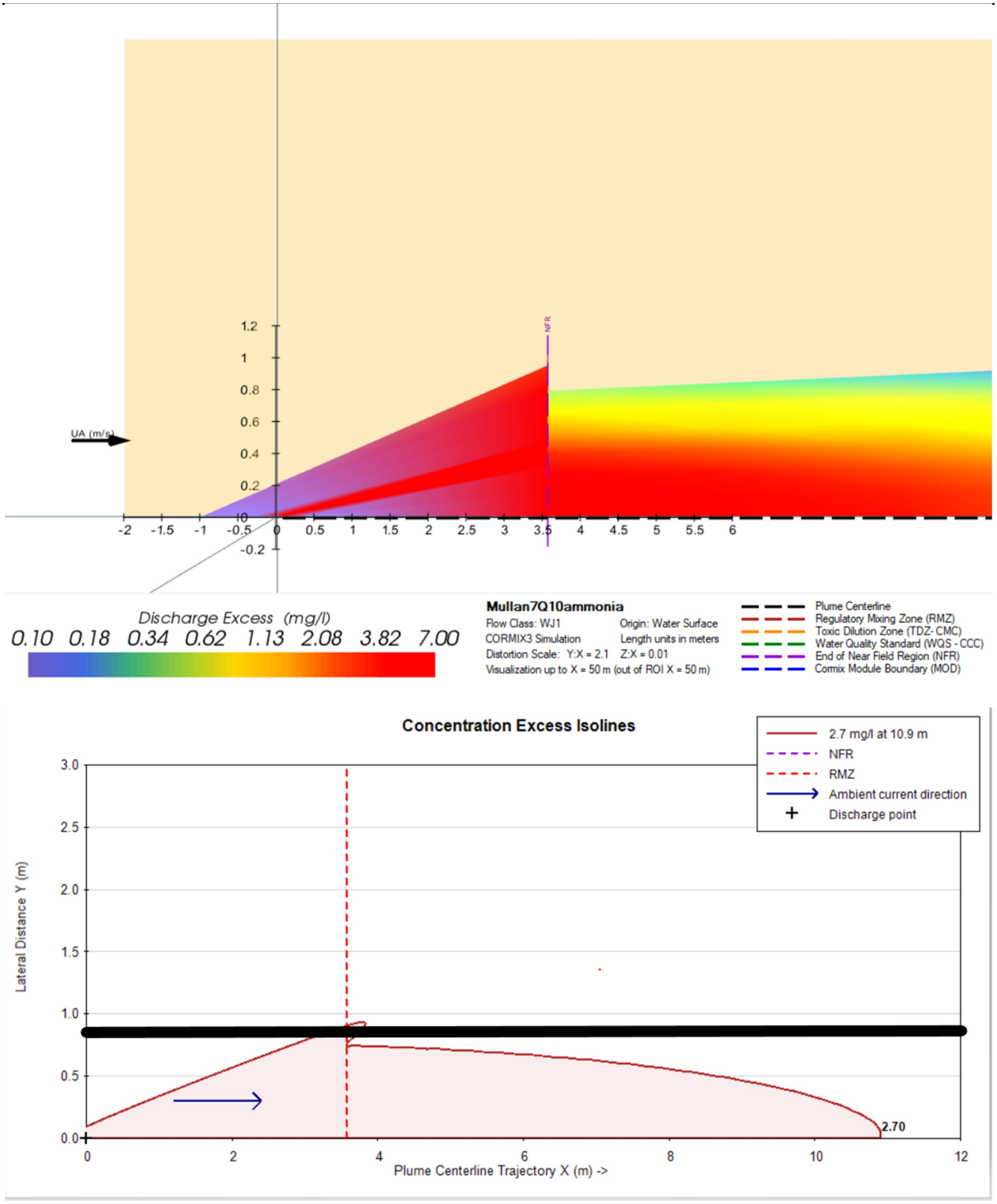

Figure 8. CORMIX modeled mixing of chronic total ammonia at critical low flows. Above: A CORVue model showing ammonia mixing and all concentrations in plan view. Below: An isoconcentration model in plan view of the ammonia chronic criterion mixing zone. The thick black line is an estimation of 25% of the width of the stream.

As stated in IDAPA 58.02.060.01.h, DEQ may authorize mixing zones that vary from the restrictions under the circumstances set forth in IDAPA 58.02060.01.i. Although some of the model inputs are estimated, DEQ believes the authorized mixing zones comply with IDAPA 58.01.02.060.01.h.

Estimated values are the modeler's best professional judgement. DEQ does not recommend mixing zone studies for Level 1 or Level 2 mixing zone analysis models. Resources to conduct a study are high, the likelihood of a critical low flow occurring during a permit cycle is low, and the due to the variable nature of rivers the likelihood of subsequent critical low flow channel morphology remaining consistent is low.

Appendix C. Your Right to Appeal

Persons aggrieved, as specified in IDAPA 58.01.25.204.01.a., have a right to appeal the final permit decision to the Board of Environmental Quality. A Petition for Review must be filed with the Department's Hearing Coordinator within twenty eight (28) days after the Department serves notice of the final permit decision under IDAPA 58.01.25.107 (Decision Process).

All documents concerning actions governed by these rules must be filed with the Hearing Coordinator at the following address: Hearing Coordinator, Department of Environmental Quality, 1410 N. Hilton, Boise, ID 83706-1255. Documents may also be filed by FAX at FAX No. (208) 373-0481 or may be filed electronically. The originating party is responsible for retaining proof of filing by FAX. The documents are deemed to be filed on the date received by the Hearing Coordinator. Upon receipt of the filed document, the Hearing Coordinator will provide a conformed copy to the originating party. Additional requirements for appeals of IPDES final permit decisions can be found in IDAPA 58.01.25.204.

Appendix D. Public Involvement and Public Comments

A. Public Involvement Information

DEQ proposes to reissue a permit to South Fork Coeur d'Alene River Sewer District Mullan Wastewater Treatment Plant. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and DEQ's reasons for requiring permit conditions.

DEQ will place a Public Notice of Draft on 07/15/2020 in Shoshone News Press to inform the public and to invite comment on the draft Idaho Pollutant Discharge Elimination System permit and fact sheet.

The notice:

- Tells where copies of the draft permit and fact sheet are available for public evaluation (a local public library, the closest regional or field office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the draft permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on DEQ's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the comment period.
- Tells how to request a public hearing about the draft IPDES permit.
- Explains the next step(s) in the permitting process.

DEQ SEEKS COMMENT ON DRAFT IDAHO POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FOR SOUTH FORK COEUR D'ALENE RIVER SEWER DISTRICT MULLAN WASTEWATER TREATMENT PLANT

PROPOSED ACTION: The South Fork Coeur d'Alene River Sewer District Mullan Wastewater Treatment Plant applied to the Department of Environmental Quality (DEQ) for an Idaho Pollutant Discharge Elimination System (IPDES) wastewater discharge permit for its municipal wastewater treatment facility located 191 Mill Road, Mullan, Idaho 83846. The DEQ is seeking public comment on the draft IPDES permit, associated fact sheet, and application for the Mullan wastewater treatment facility. This proposed permit authorizes the discharge of treated municipal wastewater year round to the South Fork Coeur d'Alene River for five years. The permit identifies the pollutants of concern and specifies associated discharge limits. Additionally, the permit specifies monitoring and reporting requirements necessary to ensure compliance, protect human health, and assure the integrity of Idaho's environment.

PUBLIC COMMENT PERIOD: Notice is given that DEQ has scheduled a period to receive public comments. Written comments on the draft permit and fact sheet will be accepted through August 14, 2020, at 5 p.m. MST. A public meeting may be held if requested in writing by July 29, 2020. The draft permit and fact sheet are available for public review at DEQ's state office (1410 N. Hilton St., Boise, ID), DEQ Coeur d'Alene Regional Office (2110 Ironwood Parkway, Coeur d'Alene, ID), and on DEQ's website. *http://www.deq.idaho.gov/news-public-comments-events/*

SUBMISSION OF WRITTEN COMMENTS–ASSISTANCE ON TECHNICAL QUESTIONS: Anyone may submit written comments regarding the proposed permit. To be most effective, comments should address water quality considerations and include supporting materials where available. Comments, requests, and questions regarding the public comment process should be directed to Karen Jackson at the address below, or to the DEQ Web site at *https://www.deq.idaho.gov/news-public-comments-events/*. Please reference the South Fork Coeur d'Alene River Sewer District Mullan wastewater treatment plant and permit number (ID0021296) when sending comments or questions. All information regarding this matter, including the issuance of the final permit, will be available on DEQ's Web site.

Submit requests for a public meeting on the draft permit and fact sheet electronically on DEQ's website, by mail, or email to Lori Flook.

Lori Flook
Idaho Department of Environmental Quality
Surface & Wastewater Division
1410 N. Hilton St.
Boise, ID 83706
Email: *Lori.Flook@deq.idaho.gov*

Karen Jackson
Idaho Department of Environmental Quality
Surface & Wastewater Division
1410 N. Hilton St.
Boise, ID 83706
Email: *Karen.jackson@deq.idaho.gov*

DEQ SEEKS COMMENT ON DRAFT IDAHO POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FOR SOUTH FORK COEUR D'ALENE RIVER SEWER DISTRICT MULLAN WASTEWATER TREATMENT PLANT

PROPOSED ACTION: The South Fork Coeur d'Alene River Sewer District Mullan Wastewater Treatment Plant applied to the Department of Environmental Quality (DEQ) for an Idaho Pollutant Discharge Elimination System (IPDES) wastewater discharge permit for its municipal wastewater treatment facility located 191 Mill Road, Mullan, Idaho 83846. DEQ is seeking public comment on the draft IPDES permit, associated fact sheet, and application for the Mullan wastewater treatment facility. This proposed permit authorizes the discharge of treated municipal wastewater year round to the South Fork Coeur d'Alene River for five years. The permit identifies the pollutants of concern and specifies associated discharge limits. Additionally, the permit specifies monitoring and reporting requirements necessary to ensure compliance, protect human health, and assure the integrity of Idaho's environment.

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Submit requests for a public meeting on the draft permit and fact sheet electronically on DEQ's website, by mail, or email to Lori Flook.

Lori Flook
Idaho Department of Environmental Quality
Surface & Wastewater Division
1410 N. Hilton St.
Boise, ID 83706
Email: Lori.Flook@deq.idaho.gov

Karen Jackson
Idaho Department of Environmental Quality
Surface & Wastewater Division
1410 N. Hilton St.
Boise, ID 83706
Email: Karen.jackson@deq.idaho.gov

CDA LEGAL 3825
AD#393855
JULY 15, 2020

B. Public Comments and Response to Comments

Idaho Pollutant Discharge Elimination System Discharge Permit No. ID0021296

Response to Comments on Draft South Fork Coeur d'Alene River Sewer District Mullan Facility IPDES Permit

August 14, 2020 comment deadline

South Fork Coeur d'Alene River Sewer District, August 14, 2020 Letter

Fact Sheet Comments

1. 2.1.3 (p.10) -The District believes the following additional relevant permit history is important to have included:
    a. IDEQ issued a variance to the final metals limits in 2009 based on environmental metals and socioeconomic hardship consistent with the 2004 EPA variance.
    b. USEPA and IDEQ entered into a 20 year compliance schedule with the District with the understanding that all parties would evaluate the feasibility of meeting water quality requirements in the receiving water during that time. This evaluation would be based in part on the success of the Central Treatment Plant to meet metals limits. There was also significant discussion about applying some form of intake credits to the final permit due to the mass of metals that the collection systems remove from the groundwater and that the District eventually treats.
    c. The City of Mullan started construction on collection system improvements to reduce I/I in the summer of 2020.

Response 1: a) Section 2.1.3 mentions this content. b) Section 2.1.3 mentions the 20 year compliance schedule. c) DEQ has added this information to Section 2.1.3.

Changes to draft permit: Comment 1.c has been added to the end of Section 2.1.3.

2. 2.1.3 (p.11) - The final sentence of this section should read, "Metals concentrations are high in municipal drinking water, groundwater, and storm water due to naturally occurring metals and legacy mining impacts."

Response 2: Thank you for your comment.

Changes to draft permit: The sentence has been changed to include "domestic water sources" as impacted by legacy mining impacts.

3. 2.2.1 (p. 14)- The last sentence reads, "At the time of permit issuance there was no TMDL addressing the suspected metals and temperature impairment of the cold water aquatic life". This should be revised to read "At the time of permit issuance, temperature was listed on the 303d list."

Response 3: The South Fork of the Coeur d'Alene River at Mullan (ID17010302PN011_03) is category 5 with the impairment cause identified as "Combined Biota/Habitat Bioassessments." This cause indicates that Beneficial Use Reconnaissance Program (BURP) monitoring conducted in 2013 and 2014 did not meet the minimum thresholds for aquatic life and habitat measures. The cause of the impairment is unknown until further work in TMDL or Stressor Identification determines the cause of impairment. Metals are still suspected at this time.

Changes to draft permit: None.

4. 2.2.2 (p.15) - The District appreciates IDEQ using Hecla river flow monitoring data which are much more representative of in-stream flows.

Response 4: Thank you for your comment.

Changes to draft permit: None.

5. Table 8 (p. 20) and 3.6.4 (p.37) -The metals limits are noted on p. 38 to be less stringent but appear to be more stringent than the 2013 permit. This could create challenges in the future with anti-backsliding. The change in metals limits is based on minimum hardness (derived during spring runoff) and minimum flow (derived from late summer). Using these two most restrictive conditions is overly protective of water quality. Since these limits are currently covered under the District's compliance schedule, the metals limits should remain unchanged until more representative hardness and flow data are developed.

Response 5: Section 3.6.4 of the public comment draft fact sheet does not refer to the 2013 metals limits as less stringent. The backsliding exception for new information (IDAPA 58.01.25.200.02.b) will be evaluated if final limits change in the future. Section 3.3.3.6 of the fact sheet outlines the method used to determine metals criteria hardness. As shown in Figure 2, the hardness used to determine criteria are based on low flows (late summer), not hardness values measured during high runoff discharges. More frequent flow and hardness data collection in the receiving water are required in this permit to better capture critical low flow hardness in the future. DEQ must run RPA with representative data for known pollutants, and include any resultant permit limits in the renewed permit.

Changes to draft permit: None.

6. Table 18 (p.40) -
    a. Continuous temperature monitoring of the effluent is required beginning 2/01/21. This is not in the District's budget and will need to be completed in 2021. Due to inclement weather in the winter, the District requests this date be changed to August 1, 2021.

b. There is no known impairment for dissolved oxygen so monitoring for phosphorus, nitrate/nitrite, and TKN is an unnecessary expense to the District. The District requests that they be eliminated from monitoring.
c. There is no known exceedance of copper in the District's effluent so this should also be eliminated from monitoring. In the event that copper monitoring is retained, testing should be quarterly per section 4.2.2 of the Fact Sheet.

*Response 6: a) Continuous monitoring for **receiving water** temperature has a delayed start time in the permit. Effluent monitoring must start on the effective date of the permit. Continuous temperature loggers are inexpensive and installment within the facility is not weather dependent. b) Phosphorus and nitrogen are pollutants of concern in domestic waste, and data are necessary for future nutrient loading estimates in the receiving water and Lake Coeur d'Alene. Sampling frequency for the first two years has been reduced from monthly to quarterly to reduce sample cost burden. If the permit is administratively extended, sampling frequency will revert to quarterly. c) There are no known copper exceedances in effluent; however, copper is a pollutant of concern for the facility (see comment and response 7). Routine copper monitoring is required to evaluate reasonable potential to cause or contribute to a water quality exceedance in the future. Sampling frequency for the first two years has been reduced from monthly to quarterly to reduce sample cost burden. The monthly monitoring frequency after two years remains to maintain consistency with other effluent metals data collection, effluent hardness collection, and monthly receiving water Copper BLM sample collection. Monthly data will also allow for seasonal limit development, if applicable. If the permit is administratively extended, sampling frequency will revert to quarterly.*

Changes to draft permit: a) None. b) None. c) Section 4.2.2 has been updated to reference copper sampling frequency of once per month.

Subsection 2.1.4 Receiving Water Monitoring

7. 4.2.2 (p.41) - Monitoring for copper has been added to the permit based on "...anecdotal knowledge of domestic water source with elevated copper..." There is no known impairment related to copper so the District requests elimination of the copper monitoring requirement

Response 7: Copper is a pollutant of concern based on the general knowledge of the domestic water source with elevated copper concentrations. DEQ agrees there is no known impairment in the receiving water of copper; however, the potential to cause or contribute to a water quality exceedance must still be evaluated. To evaluate this potential, effluent and downstream receiving water data must be collected. If no reasonable potential for a water quality exceedance is determined in the next permit cycle, monitoring requirements will be reduced.

Changes to draft permit: None

8. Table 20 (p.43) -

a. Continuous temperature monitoring of the effluent is required beginning 2/01/21. This is not in the District's budget and will need to be completed in 2021. Due to inclement weather in the winter, the District requests this date be changed to August 1, 2021.
b. There is no known impairment for dissolved oxygen so sampling for phosphorus and TKN is an unnecessary expense to the District. The District requests that they be eliminated from monitoring.
c. There is no known exceedance of copper in the District's effluent so this should also be eliminated from monitoring.

Response 8: a) DEQ agrees to this change to allow time for installation of equipment, and time to budget for equipment. b) Phosphorus is a pollutant of concern in domestic waste, and data are necessary for future nutrient loading estimates in the receiving water and Lake Coeur d'Alene. TKN is not required in receiving water sampling. c) See response 7.

Changes to draft permit: a) Monitoring for continuous parameters in the upstream receiving water has been extended to start on 09/2021. b) None. c) None.

9. Table 21 (p.44) -
    a. Continuous temperature monitoring of the effluent is required beginning 2/01/21. This is not in the District's budget and will need to be completed in 2021. Due to inclement weather in the winter, the District requests this date be changed to August 1, 2021.
    b. Similar to comment 7, copper has not been shown to be of concern. As a result, the District requests that all sampling related to BLM testing is eliminated from this permit cycle.
    c. The riverbank in the vicinity of the Mullan Treatment plant is very steep and access is a safety issue during winter. The District is willing to do winter sampling but may not be able to sample consistently. We recommend adding a footnote indicating sampling should occur when access is possible

*Response 9: a) Continuous temperature monitoring is not required for the downstream receiving water site. Grab samples for temperature are indicated in Table 21, and monitoring of Table 21 parameters are not required until 4/1/2023. b) See response 7. c) Please work with the DEQ Coeur d'Alene Regional Office Compliance Officer to complete the monitoring site location request letter, due 11/1/2020. Health and safety sampling issues should be addressed in the facility's QAPP. Section 5.4.1 of the Copper BLM Guidance [*http://www.deq.idaho.gov/media/60180840/58-0102-1502-implementation-guidance-idaho-copper-criteria-aquatic-life-1117.pdf*] acknowledges:*

"Monthly sampling may not be possible at some sites in Idaho due to accessibility and safety considerations. For locations where monthly sampling is not practical, effort should be made to minimize the time period when there are no samples collected."

No data indicator (NODI) codes are available for DMR reporting for special circumstances. Please contact the DEQ Coeur d'Alene Regional Office Compliance Officer with DMR specific questions.

Changes to draft permit: a) None. b) None. c) None.

10. 4.3.5 (p.45)-Although not a current permit limit, IDEQ is indicating that the biotic ligand model (BLM) should be used to determine any future copper limits. The District is concerned that the BLM may not appropriately reflect copper toxicity for this receiving water because the stream has been historically mineralized. The BLM does not take into account mineralized stream and aquatic biota adaptation. Additional work is needed to determine what is truly protective of aquatic health.

Response 10: DEQ acknowledges site specific criteria of certain metals (lead, cadmium, and zinc) are required in the South Fork Coeur d'Alene River. Currently, the Copper BLM is the WQC applicable to the South Fork Coeur d'Alene River, and is the most scientifically accurate model available to DEQ and EPA. If the permittee believes site specific criteria for copper to be more protective/accurate, the permittee would need to collect data demonstrating new criteria protectiveness, and petition DEQ to adopt new criteria through negotiated rule making.

Changes to draft permit: None.

11. 5.2 (p.47) -This section indicates that the Mullan WWTP has exceeded 85% capacity for TSS. The District has reviewed the historical data and identified a direct stormwater connection that the District has subsequently removed. The District also identified high TSS due to the addition of lime for alkalinity control. These two factors skewed the rolling average. Without these contributing factors, the District believes the actual rolling average is less than 85% of design capacity so there is no need for additional facility planning. The District will monitor TSS over the permit period to determine whether additional planning is needed. In addition, the City of Mullan is currently replacing large sections of their sanitary sewer system. Recent construction has led to a number of instances of construction water entering the sanitary sewer system. While this is certainly to be avoided, it is likely to continue during this major construction project. Because of these factors, the District would like to receive a variance on the influent maximum day and average month TSS load until January, 2022.

Response 11: DEQ acknowledges the rationale for the exceeded TSS capacity, and encourages the permittee to continue to analyze and review the loading capacity throughout the life of the permit. Facility planning is not required by this permit, but instead must be assessed, if necessary, when 85% of a facility TSS and BOD_5 capacity values in Table 13 of the permit are exceeded for any 2 months during a rolling 12-month period. The influent design loads are not limits, thus variances are not applicable.

Changes to draft permit: None.

Permit Comments

12. Table 2 (p.7) - refer to Fact Sheet comment 5.

Response 12: See response 5.

Changes to draft permit: See response 5.

13. Table 6 (p.12) - refer to Fact Sheet comment 6.

Response 13: See response 6.

Changes to draft permit: See response 6.

14. 2.1.4 (p.14)- refer to Fact Sheet comment 7.

Response 14: See response 7.

Changes to draft permit: See response 7.

15. Table 7 (p.15) - refer to Fact Sheet comment 6. In addition, the District would like the option of using the Hecla river water quality data for reporting. The District feels Hecla is already providing upstream water quality data so this is an undue cost to the District.

Response 15: The closest Hecla outfall to the Mullan facility is Hecla Outfall 001 (see Figure 1A of the fact sheet). Surface water monitoring of Hecla Outfall 001 is only required when discharging ("If discharge from Outfall 001 occurs during a time interval, the monitoring stations upstream and downstream of Outfall 001 must also be monitored during that time interval."). Data from Hecla Outfall 001 would not be guaranteed. Surface water monitoring of Hecla Outfall 002 is farther upstream, and does not account for the additions of Mill Creek and Boulder Creek to the South Fork Coeur d'Alene River. In addition, the Hecla permit does not required sampling of ammonia or phosphorus in receiving water.

Changes to draft permit: None.

16. Table 8 (p.16) - refer to Fact Sheet comment 9.

Response 16: See response 9.

Changes to draft permit: See response 9.

17. 2.2.7 (p.22)-The permit requires the District to report "...within 24 hours...an overflow for a contributing collection system...". The District does not have ownership or any direct control over the contributing collection systems. As a result, this section should be eliminated with reporting required by the collection systems themselves.

Response 17: POTWs must report overflows from extrajursdictional systems, if identified as a condition of the permit, when they become aware of the issue, regardless of whether the overflow reaches a Water of the US. An overflow from a contributing collection system that the permittee accepts wastewater from, which is affected or was affected by the permittee's operation or infrastructure, must be reported.

Changes to draft permit: The following text in bold has been added to section 2.2.7 of the permit.

5. Any overflow prior to the treatment works over which the permittee has ownership or has operational control, or an overflow from a contributing collection system that the permittee accepts wastewater **from which affected or was affected by the permittee's operation or infrastructure**. An overflow is any spill, release, or diversion of municipal sewage including:
   a. An overflow that results in a discharge to waters of the United States; or
   b. An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a building service line), or discharged to the soil's surface that does not reach waters of the United States.

Idaho Conservation League Comments August 14, 2020 Letter

18. Oil and Grease Monitoring
ICL requests that the proposed permit is revised to include effluent limits and effluent monitoring requirements for oil and grease.

The fact sheet for the proposed permit states that between 2013 and 2019 the average value for oil and grease in the Mullan WWTP's effluent was 3.3 mg/L and the maximum value detected was quite high at 39 mg/L (Fact Sheet, Table 4). Despite that, Table 19 in the Fact Sheet states that oil and grease have not been detected in samples since 2013. The proposed permit should be revised to include effluent limits and effluent monitoring requirements for oil and grease.

Response 18: DEQ investigated the high oil and grease concentration, and found that the 39 mg/L concentration reported in April 2019, was a reporting error. The permittee had reported a QA/QC value, instead of the effluent result. A copy of the effluent results and laboratory spike concentration has been attached to the end of this response to comment. The value has also been corrected in EPA's Integrated Compliance Information System (ICIS). Monitoring for oil and grease will still occur during re-application monitoring (3x/permit cycle).

Changes to draft permit: Table 4 of the fact sheet has been corrected.

19. pH Monitoring

ICL requests that DEQ revise the proposed permit by requiring pH monitoring for Mullan's upstream monitoring site to occur at a specified time between 3 and 8 pm - the time of day pH is likely to be the highest in the South Fork Coeur d'Alene River.

The pH of the SFCDA River, like all rivers, will exhibit a natural diurnal cycle due to photosynthetic activity. Depending on the level of biological activity and general water quality characteristics, rivers can experience a pH change sometimes as high as 1 pH unit over the course of 24-hours (Jones and Graziano, 2013; Nimick et al., 1998). The effluent limits for ammonia in the proposed permit were based on calculations incorporating pH to assess the reasonable potential for ammonia to cause harm. The pH value DEQ used to conduct the reasonable potential analysis (RPA) for ammonia was chosen based on the 95th percentile of 20 data points collected at Mullan's upstream monitoring site. If the Mullan WWTP collected those data points in the morning, when pH was likely the lowest, this would indicate that the river pH may be capable of reaching values as high as 8.9 during its diurnal cycle. A pH of 8.9 in the SFCDA River would cause higher levels of ammonia, potentially harming aquatic organisms. In other words, if the Mullan WWTP monitored the receiving water for pH in the morning, DEQ's RPA of ammonia would not be protective of the SFCDA River's most vulnerable water quality conditions that may exist during the latter parts of the day. Because ammonia toxicity increases with increasing pH, it is essential to not only perform quarterly measurements within a specified time range each sampling period, but also to perform pH monitoring at the time of day where pH is likely to be the highest (i.e. between 3 pm and 8 pm).

Response 19: Using the 95th percentile of a sufficient amount of pH data (n≥20) is deemed sufficiently conservative to protect aquatic life when following RPA according to EPA's Technical Support Document (TSD)[https://www3.epa.gov/npdes/pubs/owm0264.pdf*] and DEQ's Effluent Limit Development Guidance (ELDG) [*https://www.deq.idaho.gov/media/60181085/ipdes-effluent-limit-development-guidance-1217.pdf*]. When n≤20, the maximum observed pH value is typically used. Please note multiple assumptions of 'worst case scenarios' are used in RPA and limit development calculations.*

Changes to draft permit: None.

20. Mullan Population

The proposed permit incorrectly states (Fact Sheet, pg. 47) that the city of Mullan is experiencing a reduction in population and furthermore an increase in influent loading is not expected. ICL requests that this statement be revised according to the current U.S. Census Bureau data depicting an increase in population from 670 to 687 since 2015[x].

[x] U.S. Census Bureau demographic information for the City of Mullan, Idaho available at https://data.census.gov/cedsci/profile?g=1600000US1655630 (last accessed August 14, 2020).

Response 20: DEQ agrees the reference to a reduction in population is no longer accurate.

Changes to draft permit: Footnote 6 has been removed from section 5.2 of the fact sheet that referenced a decrease in Mullan's population.

21. Additional Pharmaceutical Pollutant Monitoring

ICL requests that the proposed permit be revised to include effluent monitoring requirements for pharmaceutical compounds that are endocrine active compounds (EACs).

Pharmaceutical compounds, such as antidepressants and hormone steroids, have been identified as contaminants of emerging concern because, as endocrine disruptors, there is growing concern that they are increasingly being detected in municipal wastewater effluent, as well as receiving water bodies downstream of wastewater treatment plants (Metcalfe et al., 2010; Ying et al., 2002). Endocrine disruptors have the potential to cause harm to downstream fish (Corcoran et al., Schultz et al., 2013). Most pharmaceutical compounds are nonpolar, which means they can diffuse through biological membranes and interact with an organism's endocrine system – this interaction can have profound impacts on the physiological functions of aquatic life (Corcoran et al., 1010). Unfortunately, the common practice in our country is to sewer or flush over-the-counter medications that are unused or expired. This practice is problematic because the latest research shows wastewater treatment plants that utilize chlorination as a purification method cannot successfully dechlorinate pharmaceutical compounds before discharging effluent into the environment (Molé et al., 2019).

The City of Mullan, as is the United States as a whole, is aging. As Mullan's population continues to grow older, pharmaceutical use will increase and, by extension, so will their disposal into public sewer systems (U.S. Census Bureau, 2020). According to the U.S. Census Bureau's most recent estimates, nearly 16% of the people in Mullan are 65 years of age or older[xi].

Moreover, EPA's environmental justice reporting tool, EJScreen, indicates that Mullan's population of elderly people is above the national, regional, and state averages (see attached file submitted along with ICL's comments).

The SFCDA River currently fails to support its beneficial uses for cold water aquatic life and salmonid spawning, in part, because of the extreme metals contamination in the river and surrounding landscape. Accordingly, it is important DEQ get ahead of emerging water quality issues that could further degrade the beneficial uses in the SFCDA River, by requiring monitoring for pharmaceuticals as an emerging contaminant of concern. By adding these monitoring requirements, Mullan would collect the necessary baseline data for DEQ to determine if and to what extent pharmaceuticals are being released in Mullan's wastewater discharge and impairing downstream water quality.

[xi] See id.

Response 21: DEQ agrees pharmaceutical compounds in wastewater are pollutants of emerging concern. Currently, there are no water quality standards or benchmarks for these compounds in Idaho. DEQ may request collection of this data at a later time according to CWA Section 308 in order to obtain necessary and appropriate information to study discharges of pollutants and make regulatory decisions

Changes to draft permit: None.

References

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Nimick, D.A., Moore, J.N., Dalby, C.E., Savka, M.W., 1998. The fate of geothermal arsenic in the Madison and Missouri Rivers, Montana and Wyoming. Water Resour. Res. 34, 3051–3067. https://doi.org/10.1029/98WR01704

Schultz, M.M., Minarik, T.A., Martinovic-Weigelt, D., Curran, E.M., Bartell, S.E., Schoenfuss, H.L., 2013. Environmental estrogens in an urban aquatic ecosystem: II. Biological effects. Environ. Int. 61, 138–149. https://doi.org/10.1016/j.envint.2013.08.006

U.S. Census Bureau, 65 and Older Population Grows Rapidly and Baby Boomers Age, June 25, 2020 available at https://www.census.gov/newsroom/press-releases/2020/65-older-population-grows.html (last accessed August 14, 2020).

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ICL Attachment

United States Environmental Protection Agency

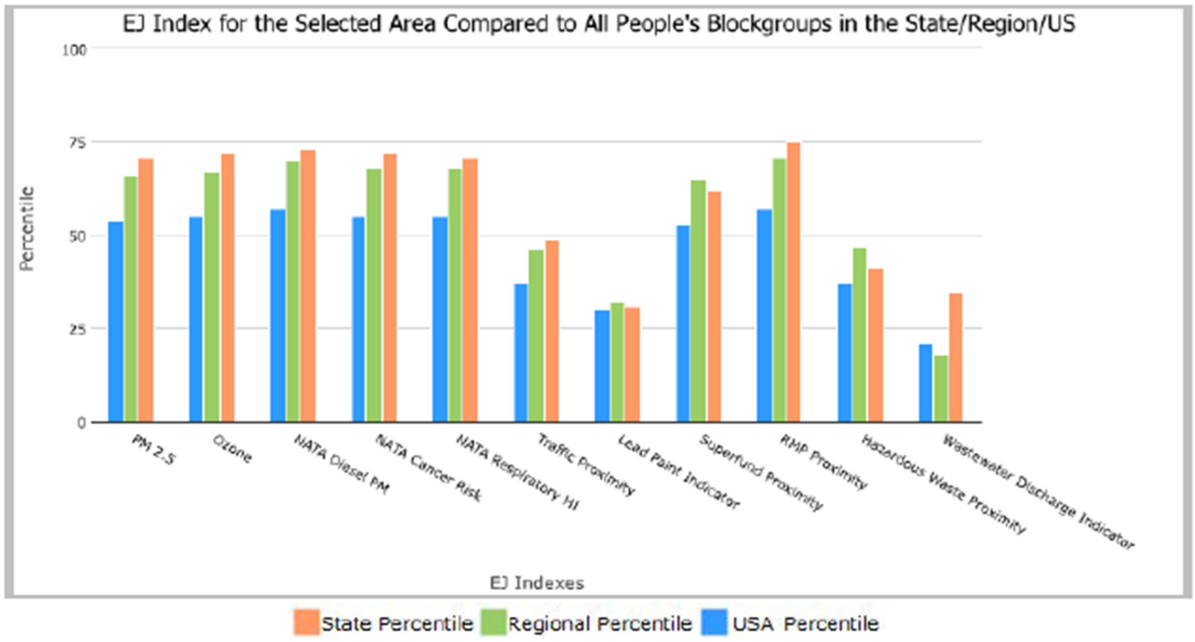
EJSCREEN Report (Version 2019)

1 miles Ring Centered at 47.469160,-115.799970, IDAHO, EPA Region 10

Approximate Population: 791

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	71	66	54
EJ Index for Ozone	72	67	55
EJ Index for NATA* Diesel PM	73	70	57
EJ Index for NATA* Air Toxics Cancer Risk	72	68	55
EJ Index for NATA* Respiratory Hazard Index	71	68	55
EJ Index for Traffic Proximity and Volume	49	46	37
EJ Index for Lead Paint Indicator	31	32	30
EJ Index for Superfund Proximity	62	65	53
EJ Index for RMP Proximity	75	71	57
EJ Index for Hazardous Waste Proximity	41	47	37
EJ Index for Wastewater Discharge Indicator	35	18	21



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

August 14, 2020 1/3

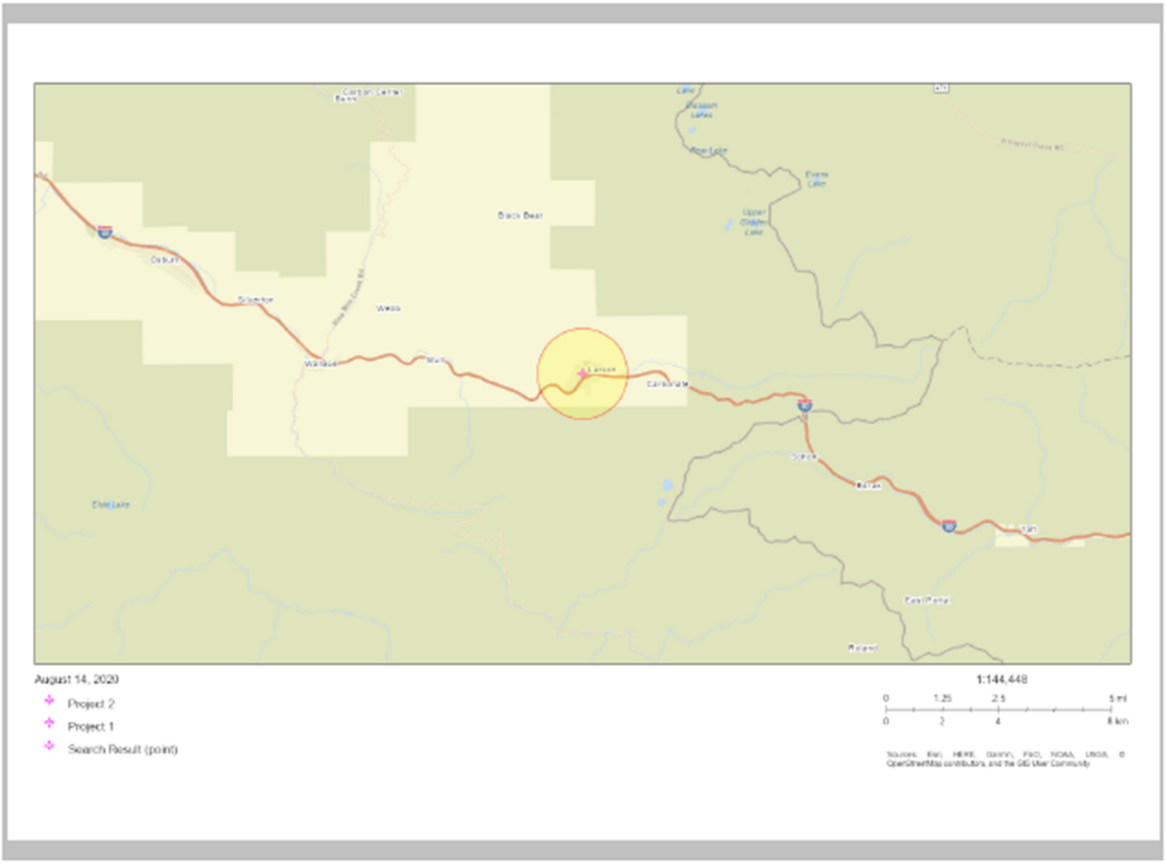
United States Environmental Protection Agency

EJSCREEN Report (Version 2019)

1 miles Ring Centered at 47.469160,-115.799970, IDAHO, EPA Region 10

Approximate Population: 791

Input Area (sq. miles): 3.14



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	1

United States Environmental Protection Agency

EJSCREEN Report (Version 2019)

1 miles Ring Centered at 47.469160,-115.799970, IDAHO, EPA Region 10

Approximate Population: 791

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	7.85	7.38	59	6.6	86	8.3	35
Ozone (ppb)	37.1	43.6	1	35.1	71	43	18
NATA* Diesel PM (µg/m³)	0.0508	0.293	10	0.479	<50th	0.479	<50th
NATA* Cancer Risk (lifetime risk per million)	19	25	32	31	<50th	32	<50th
NATA* Respiratory Hazard Index	0.3	0.38	37	0.46	<50th	0.44	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	290	260	70	500	60	750	56
Lead Paint Indicator (% Pre-1960 Housing)	0.7	0.19	97	0.23	94	0.28	88
Superfund Proximity (site count/km distance)	0.035	0.029	83	0.13	36	0.13	31
RMP Proximity (facility count/km distance)	0.024	0.5	6	0.65	3	0.74	0
Hazardous Waste Proximity (facility count/km distance)	0.92	0.38	87	1.5	63	4	62
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0.0027	40	63	31	82	14	72
Demographic Indicators							
Demographic Index	31%	27%	67	29%	63	36%	51
Minority Population	12%	17%	40	27%	23	39%	25
Low Income Population	50%	37%	80	31%	84	33%	78
Linguistically Isolated Population	2%	2%	72	3%	60	4%	56
Population With Less Than High School Education	16%	10%	81	9%	82	13%	70
Population Under 5 years of age	10%	7%	84	6%	86	6%	86
Population over 64 years of age	15%	15%	58	15%	58	15%	56

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

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1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	SOUTH FORK CDA RIVER SEWER DISTRICT	**Batch #:**	190405003
Address:	1020 POLARIS AVE	**Project Name:**	SVL #X9D0095
	OSBURN, ID 83849		
Attn:	SVL ANALYTICAL		

Analytical Results Report

Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Hexane extractable material (HEM)	39.1	mg/L	40	97.8	78-114	4/12/2019	4/12/2019

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Hexane extractable material (HEM)	38.6	mg/L	40	96.5	1.3	0-18	4/12/2019	4/12/2019

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
190410007-001	Hexane extractable material (HEM)	ND	40.2	mg/L	40	100.5	71-116	4/12/2019	4/12/2019

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Hexane extractable material (HEM)	40.1	mg/L	40	100.3	0.2	0-18	4/12/2019	4/12/2019

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Hexane extractable material (HEM)	ND	mg/L	1	4/12/2019	4/12/2019

AR	Acceptable Range
ND	Not Detected
PQL	Practical Quantitation Limit
RPD	Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013;NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Wednesday, April 17, 2019 Page 1 of 1

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	SOUTH FORK CDA RIVER SEWER DISTRICT	**Batch #:**	190405003
Address:	1020 POLARIS AVE OSBURN, ID 83849	**Project Name:**	SVL #X9D0095
Attn:	SVL ANALYTICAL		

Analytical Results Report

Sample Number	190405003-001	**Sampling Date**	4/3/2019	**Date/Time Received**	4/4/2019 4:26 PM
Client Sample ID	MULLAN-FINAL EFFLUENT	**Sampling Time**	8:00 AM	**Extraction Date**	04/12/2019
Matrix	Water	**Sample Location**	X9D0095-01		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Hexane extractable material (HEM)	ND	mg/L	1	4/12/2019 3:00:00 PM	RPR	EPA 1664A	

Sample Number	190405003-002	**Sampling Date**	4/3/2019	**Date/Time Received**	4/4/2019 4:26 PM
Client Sample ID	MULLAN-BLANK	**Sampling Time**	8:00 AM	**Extraction Date**	04/12/2019
Matrix	Water	**Sample Location**	X9D0095-02		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Hexane extractable material (HEM)	ND	mg/L	1	4/12/2019 3:00:00 PM	RPR	EPA 1664A	

Authorized Signature

Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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